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London Fares Proposals

THE suggestions put forward earlier this week by the British Transport Commission to bring about the reduction of some £700,000 required by the Transport Tribunal on the return expected under the British Transport Commission Passenger Charges Scheme, 1954, are confined to the higher London fare categories. The Commission has sought a solution which, while bringing about the required result as far as London Transport is concerned, would not have an unreasonable effect on the finances of the London lines of British Railways; these finances, even under the original proposals, were not regarded as satisfactory. This has proved to be impossible, and the suggestion has therefore been put forward that any loss in this direction should be compensated by variations in the proposed scale of season ticket rates. The suggestions are: that no existing London Transport single fare of 1s. and over, or British Railways London day return fare of

2s. and over, be increased; that the proposed scale for early morning single fares be modified by reducing the five- and six-mile fares from 5d. to 4d.; and the proposed early morning return fare scale modified by reducing fares for five to ten mile journeys inclusive by 1d. Scales for season tickets would be modified to bring them broadly into line with those approved under the Passenger Charges Scheme of 1952 increased by approximately 10 per cent. The effect would be to increase existing season ticket rates for mileages over two by amounts graduated according to distance. The suggestion put forward by the Transport Tribunal that a 3d. single fare should be introduced is considered to be impracticable, but a further memorandum on this point is to be submitted to the Tribunal. The estimated yield from the modified scheme is £3,725,000 from London Transport, a reduction of £618,000, and £825,000 from the London lines of British Railways, which is £130,000 less than was expected from the original scheme. The total reduction is £748,000.

Wages Restraint

THE need for restraint by the trade unions in submitting wage claims was stressed in a recent speech by Mr. Arthur Deakin, General Secretary of the Transport & General Workers' Union. There were, he implied, various ways for union leaders to interpret the functions of the trade union movement in improving conditions of employment besides pressing, on behalf of union members, a constant succession of wage demands. Stabilisation of living costs no doubt would be popular with many union leaders. Mr. Deakin's condemnation of conferences which force their leaders to submit wage claims which they cannot hope to realise is merited and timely, and more particularly so in view of the necessity for keeping down production costs of exports in the face of growing competition from abroad. Many trades unionists must know very well that failure of the industries producing for export to maintain their position in markets overseas would lead ultimately to widespread unemployment. It would be reassuring to hear that the mass of the rank and file of union members was prepared to lend its support to this policy and instruct its union executives accordingly.

The I.C.C. and European Transport

A ROUND table discussion on European inland transport was convened recently under the auspices of the International Chamber of Commerce, to "rethink European transport in the spirit of 1954." Representatives of both providers and users of transport attended. The main conclusions reached at the discussions as far as concerns railways proved to be a re-statement in general terms of ideas already current in this country. The release of railways from oppressive statutory obligations, with State aid to finance any losses incurred by obligations retained, was suggested, as was a rate structure based on real costs. Expenditure on long-term projects was advocated, with a programme of road, rail, and inland waterway routes and suitable transshipment points to allow each stage of transport to be carried out by the most suitable means. International financial arrangements, which would strengthen the links between European networks, were tentatively proposed, and it was recommended that at national and international levels consultations between transport managers and transport users be extended.

Steel Production

THE record figures for steel production in Britain, bidding to outstrip the industry's own target for this year by a considerable amount, seem likely to bring in a higher return than was at first thought likely. The succession of cuts in export prices which has been a feature of the market since the early months of last year is showing signs of coming to an end, and fears of American dumping in other markets have not been realised. At the same time the Brussels steel export cartel, covering the main Continental producers, has increased, by a small amount, the prices to be charged by its

members. This development may eventually assist British locomotive and rolling stock manufacturers to meet overseas competition, provided that internal prices can be kept down and the volume of the steel export trade does not rise to such proportions as to starve the home market. Steel production figures, at a rate of 19,476,000 tons a year in May, suggest that steel should now be available to any prospective user. There may still be difficulties in balancing supplies of various types of steel, and, particularly, steel plate, with the demand for particular products, but, if such difficulties do exist, no doubt the steel industry will overcome them as effectively as it has raised overall production.

Overseas Railway Traffic

PERUVIAN Corporation traffic receipts from Peruvian railways and steamers for the nine months ended March 31, 1954, were approximately soles 9,000,000 (against soles 12,400,000 for the corresponding period of 1952-53). Bolivian international traffic receipts in respect of the Peruvian Section (Southern Railway and lake steamers) are included in these figures. For the Guaqui-La Paz Railway there was a deficit of bolivianos 33,600,000 (7,850,000). Total sterling remittances from Peru and Bolivia during the nine months ended March 31 last were £651,887 (£799,553). Gross receipts for April, 1954 were soles 10,913,000 and bolivianos 40,962,000, representing increases over April, 1953, of soles 1,435,000 and bolivianos 22,718,000, respectively. The Peruvian average remittance rate was soles 54.00 to the £, compared with soles 43.44 in April, 1953. The Bolivian official remittance rate for restricted amounts was bolivianos 537.08 to the £ against 169.61 last year. Gold Coast Railway receipts for April were £308,902, a decrease of £76,159 compared with April of last year.

The Strike in Rhodesia

THE unofficial strike of Rhodesia Railways firemen earlier this month caused an economic and transport crisis in both Northern and Southern Rhodesia. Tobacco and copper exports were held up, and the movement of oil and coal for domestic use was given priority. The strike, the first by European workers for some 20 years, began on June 4 when men at the Salisbury depot came out in support of their claim for higher wages, a claim following an arbitration award made in April which the railway unions and the administration agreed in advance to accept. The strikers demanded that awards made by voluntary arbitration should not be binding for a year, as now, thus depriving them of power of redress within that period. It is understood that the basic monthly pay of the firemen before the award ranged from £39 to £56 10s. and that the men asked for the minimum to be raised to £45, with a narrowing of the range in the reduction of the maximum to £52 10s. The Arbitration Board awarded a general increase in basic rates and allowances for certain grades, but details are not yet available. Firemen at other important centres such as Bulawayo, Gwelo and Dett joined the strike. The men returned to work on June 10 when the Southern Rhodesia Government assured them that it would consider suggestions which their union wished to make for alterations in industrial legislation.

Reaping the Whirlwind

THE opening of the South Bank site as an official airport in central London for helicopter taxi services and the shuttle service to be operated in the near future by British European Airways between London Airport and the South Bank are the harbingers of what may well become a serious challenger to inter-city railway services. The prospect of small six-seater helicopters beating their way 500 ft. above the Thames may not, in itself, be alarming. The capacity is small and charges are high, 30s. for a direct distance of 14½ miles, but the larger helicopters of the future and, still more, the vertical take-off aircraft

now under development, may well bring many passengers, at moderate fares, into the centre of our cities. The natural advantage of railways in reaching the centre of towns may thus be nullified, and it is time for the railways to take up the challenge. Mr. Peter Masfield, Chief Executive of B.E.A., has spoken of helicopter services from Southampton to enable liner passengers to join European flights at London Airport. This is an example of the type of service with which the railways can compete by better, faster and cheaper inter-city services and, where possible, services to the airports themselves.

The First Passenger Railway

THE Swansea & Mumbles Railway, which celebrates its 150th anniversary on June 29, is not only the oldest surviving passenger railway in the world but has other claims which lend it a distinction surely enjoyed by no other line only 5½ miles in length. The shores of Swansea Bay which the railway skirts are a popular resort, and, as the mineral traffic for which the line was authorised in 1804 failed to come up to expectations, conveyance of passengers became the mainstay. Even in the era of steam haulage between 1877 and 1929 heavy traffic was carried, and after the line was electrified it increased still more; last year's total of 3,150,000 compares with 1,192,922 in 1938. The railway, which has used animal, compressed air, steam, battery, petrol, and diesel traction in the course of its long life, is now worked by 106-seat double-deck electric cars, the largest vehicles of their type in the country, built in 1928 by the Brush Electrical Engineering Co. Ltd., with B.T.H. power equipment. Even in its administration the Mumbles Railway is unusual; it is claimed to be the only one in this country, if not in the world, to be controlled by a bus company—the South Wales Transport Co. Ltd.

Station Remodelling and Shop Rentals

FINANCIAL justification for the rebuilding or large-scale general improvement of station buildings often contains a comparatively small credit item of revenue expected from the leasing of new shops provided in these buildings. In the case of the North Western terminal in Chicago, however—which, as reported in our overseas columns, is now being remodelled—such leases are, apparently, considered to be one of the two main reasons in favour of the expenditure of nearly £180,000 on this work. This is because some 95,000 passengers use the station daily, and a proportional number should patronise the complete shopping centre, covering an area of 25,000 sq. ft., for which the whole street-level first floor of the station building is being converted. A wide variety of shops conveniently placed in the paths of so many passengers may be expected to realise a high aggregate rental. The second and probably stronger justification for the remodelling is the more efficient working of the station that will be secured by the concentration of all passenger facilities on the platform-level second floor of the building; at present they are distributed over four floors.

Carelessness at a Crossing

THE fatal accident at the Moulinearn public level crossing on September 8, 1953, when a tractor and trailer were run down with the loss of two lives, was brought about by what Colonel W. P. Reed, whose report is summarised in this issue, was obliged to call "inexcusable disobedience of instructions" by a relieving gatekeeper, actually a relief porter. Increase of road traffic had resulted in men being sent to the crossing to take duty during day hours, the entire work having been taken previously by a woman gatekeeper residing there. A telephone was provided to Ballinluig station and permission had to be obtained from the signalman before opening the gates, while when they were again closed the fact had also to be notified to him. There was some confliction of evidence and Colonel Reed could not believe that the man had tried to telephone. Even had that been so, he had no justification for opening the gates with-

out express permission. Although a slow-thinking man and not very intelligent, he did know, as Colonel Reed thinks, what his duty was, but his failure to act correctly already had been noticed by the woman gatekeeper who, with praiseworthy thoughtfulness, tried to ensure the rules being properly observed. It is considered that the stationmaster might have acted to better effect after she had voiced her fears to him. As the report stresses, reliability of character is the first thing needed in such work and hence to be looked for when appointing anyone to it.

Passenger Timetables and Rolling Stock

IN an introduction to a series of articles under the general title "Towards Fuller Employment," the first of which is published in the current issue of *British Transport Review*, the Chairman of the British Transport Commission, Sir Brian Robertson, urges a more critical attitude to the problems facing the railways of this country. This is necessary, he points out, if they are to overcome the difficulties of the next few years. A first task is a study of the employment—in its original sense of application to some definite purpose—of physical resources.

The first article in the series is by Mr. G. F. Fiennes, Assistant Divisional Operating Superintendent (Eastern), Eastern Region, and is concerned with passenger rolling stock. The author sets out to show that there are potential economies to be found in the operation of passenger trains, which, he says, are significant in relation to the financial problem, and will flow naturally from a shift of emphasis in the design of a timetable away from the supposed public demand to the efficient use of rolling stock. He sets out a very convincing case with the help of four main examples drawn from existing or planned revisions of services. These revisions were all designed to make better use of rolling stock and train crews, and all subordinated the apparent public interest to the overriding operational wish for better use of the facilities. Despite this subordination, a better public service emerged in each case from the planning, and in all four instances there is an actual or prospective saving in costs which should total some £500,000 a year.

The differences between the examples lie in the forms of traction involved. One is a steam suburban service in South Wales; one a main-line steam express service on two routes in East Anglia; the third deals with a group of branch diesel services in East Anglia; and the fourth is an electric outer-suburban service in Essex. The first two schemes are already in operation while the branch diesel services are expected to begin in 1955 and the outer-suburban electric service in 1957. Every principal form of railway motive power is thus represented, and Mr. Fiennes suggests that if these fundamental differences can be reconciled so advantageously by the simple device of shifting the emphasis in planning to allow the intensive use of rolling stock and crews to predominate, it is at least arguable that a similar shift of emphasis generally throughout British Railways would bring to light many similar opportunities.

He draws attention to the fact that, unlike the other examples, the South Wales experiment called neither for new equipment nor higher operating speeds. This scheme takes in the branch lines to the north and west of Cardiff and serves an area with a population of over 700,000. When the experiment was undertaken passenger travel in the area had fallen to little more than 28,000 journeys a day. The revenue in 1952 was nearly £700,000, but the operating expenses were still greater. The introduction of the new timetable brought about a broad balance of receipts and expenses. A substantial increase in net revenue has been achieved with no mileage reduction. Loaded passenger train mileage has in fact increased by over 6,500 a week. On the Cardiff-Barry run there are 23 extra trains a day and between Cardiff and Pontypridd an extra 14. There have been lesser improvements elsewhere, but despite this the new timetable called for 25

fewer engines, 98 fewer carriages, 15 fewer sets of engine-men and 28 fewer guards. The basis of the replanning is the starting of a train from each end of the line at a given time each day and running them back and forth as many times as possible, adding to these only such extra trains as seem essential. It is the extra trains, as Mr. Fiennes points out, which add heavily to operating costs.

The second example is that of the service introduced between Liverpool Street and Norwich in 1953. The same principles applied but were coupled with certain accelerations, ranging from ten to 30 min. These accelerations enable engines which enter service early in the day to make two round trips, a distance of 464 miles, and, in fact, the average daily mileage figure for the "Britannia" class engines on this working has been 364, which is nearly four times the average in this country. Estimates for this scheme included the cost of 23 British Railways standard 7MT locomotives, and of this one-third represented the betterment involved in the higher performance. This betterment cost was recovered in 15 months. The principal economies in the 1950 and 1953 schemes together amounted to ten engines, 14 train crews, and 36 carriages.

The third instance of re-planning resembles the second in requiring improved performance from the motive power. On the branch services involved higher operating speeds are less important than the use of multiple-unit trains requiring no terminal engine movements. The use of diesel traction will mean also that no time will be lost in servicing locomotives during the day. Each unit is expected to run some 318 miles a day, which is some three times the national average for coaching stock. Loaded passenger train miles will increase by some 25 per cent, and 13 diesel trains, comprising 26 vehicles in all, will replace 15 engines and 64 carriages; 39 fewer men will be required and the initial cost of the stock will be amortised in less than three years. The final example, the extension of the Shenfield electrified service to Southend and Chelmsford, some 30 route miles, will operate 28 per cent more mileage with 92 vehicles compared with the present 21 steam engines and 140 carriages. Operating savings of £90,000 a year are anticipated.

By the standards set in planning these new services, the former timetables, says Mr. Fiennes, must be considered extravagant. The system of adding improvements to a timetable piecemeal usually results in a service more costly than the unimproved service, and many railwaymen will go further than this to say that constant "improvements" over a long period of years often distort whatever logical framework there may have been in the original timetable to a mere patchwork. Clearly Mr. Fiennes has something of this in mind, for he suggests either a rigid, interwoven, pattern of trains, such as that adopted on the former Southern Railway, which presents insurmountable obstacles to change, or allowing improvements to be made with a wholesale revision of the timetable to weed out faults every few years. The search for rolling stock economy might be extended to cases where two lines built for competitive reasons are carrying traffic which could be carried by one, either as its stands, or with minor improvements, or even with full-scale electrification. One exercise in this sense, he says, foreshadows a net economy of some £500,000 a year.

The last line of search suggested concerns marginal peak trains, both daily and seasonal. In off-peak periods extra trains may be provided for £275 a year each. Extra peak-period trains may cost £5,700 each. The railways, it is suggested, instead of opposing applications from road operators to run peak period services should support them and ask that they should be at more frequent intervals. If holiday travellers could be persuaded to start their journeys on Friday nights it might be possible to get a double trip out of much rolling stock which now performs only a single round trip and thus cut the operating loss which is inherent in such services at present. The importance of better use of British Railways coaching stock, which stands at a book value of over £130,000,000, is exemplified by the fact that of seven European countries, the use made in this country of coaching stock,

in terms of millions of passenger kilometres per vehicle per year, is, at 0.795, the lowest. West Germany comes next at 1.307, and Holland, with 3.835, heads the list. Such comparison, says Mr. Fiennes, must surely compel drastic pruning of the extravagant growth of demands on rolling stock, particularly during the peaks.

Prospects for the C.P.R.

AT the annual general meeting of the Canadian Pacific Railway shareholders on May 5, Mr. W. A. Mather, the President, in moving the adoption of the report for the year ended December 31, 1953, summarised in our issue of April 9, expressed his views on the future of railways in Canada and of the C.P.R. in particular. The great strides being made in Canadian industrial and financial development, as reflected in the record capital investment of \$5.8 billion planned for 1954, are being vitally assisted by her railways.

Since the last war, the C.P.R. has spent some \$430 million on additions and betterments to its properties, and its capacity, working efficiency, and service have never been so great. No effort is being spared, first, to improve operating techniques by applying many and various technical developments, and, second, to produce more units of transportation at less cost. Foremost among measures taken to effect economy in operation, has been the substitution of diesel for steam traction on certain lines at a cost of about \$70 million, a bold step that has reduced working expenses by some \$12 million a year; further change-over to diesel power is to be expected.

As indicative of the increase in efficiency that has been secured on the C.P.R. it is noteworthy that, though traffic during the past 25 years has increased by roughly 50 per cent, the number of man-hours required to move it has fallen by about 10 per cent. Also, longer trains of higher-capacity wagons running at faster speeds last year resulted in a record gross ton-mileage per freight-train hour. It is significant, however, that despite this great increase in efficiency and the considerably larger volume of traffic moved, net earnings have fallen to about half what they were 25 years ago, due to the much greater expenditure necessary to meet present-day enhanced costs of wages and materials.

This comparatively low ebb in net earnings demands urgent modification of existing restrictions to permit adjustment of the rate structure to meet changed conditions resulting from keen competition of other forms of transport. It is of vital importance not only to the railways but also to the country as a whole that the railway administrations should be allowed the greatest possible freedom in pricing their services. The most important rates, on grain, were fixed long ago and can be lifted only by a change in Government policy; such a change would benefit not only the railways but the national economy.

The restrictions imposed on the railways have hindered the effective meeting of competition and have been indirectly responsible for the diversion of much high-grade traffic that could best be moved by rail to less economical means of transport. Not only has this resulted in loss of railway earnings, but it has increased the over-all outlay for the country's transportation as a whole, because the agencies handling the diverted traffic have costs greater than those of rail transport. The C.P.R. administration seeks no special privileges for the railway, but only a transportation policy that is appropriate to today's conditions. For it is confident that with full opportunity to compete freely and fairly, the C.P.R.—because of its high standard of service and efficiency and its low cost compared with competing forms of transport—will recapture and retain such traffic as can most advantageously be carried by rail.

Hitherto, the most urgent need for the replacement of worn-out freight equipment and for more economical working, secured by costly dieselisation, has had first claim on the financial resources of the company, and has

delayed attention to the also important demands of passenger traffic. Now, however, in addition to the new lightweight coaches and the Budd air-conditioned railcars placed in service last year, delivery is expected during June of the first of the Budd coaching units, which in the summer of 1955 will provide a full complement of stainless steel transcontinental coaching stock with ultra-modern features of comfort and convenience. A new fleet of diesel-electric locomotives to work this stock is also being delivered; some of them will work over the 5,700-mile round trip between Montreal and Vancouver. The existing transcontinental stock will then be available for the improvement of other services.

Mr. Mather concluded by stressing the continuing confidence in the outlook of the company shown by the planning of a \$75 million capital expenditure programme for 1954, as outlined in the annual report.

Draughting Locomotive Boilers

THE problem of smokebox performance has long been studied because the relative proportions of the blastpipe and chimney, the draught producing agents, govern the steaming capacity of the boiler and hence the power available for traction. In all investigations the aim is to produce the highest possible evaporation with the least blastpipe steam pressure. This is the fundamental consideration, the importance of which remains unchanged under all other conditions. As long ago as 1827 Timothy Hackworth, during trials with the locomotive *Royal George*, is said to have conducted a series of tests with exhaust nozzles of varying diameter, with the idea of determining the size of orifice which would give the best results in steam production at the same time assisting over-contraction of the exhaust orifice, and therefore any resultant back pressure and reduction in the hauling power of the locomotive.

Since that time, tests of precisely the same kind have been made by many experimenters. Of these, the investigations carried out at the University of Illinois by Everitt G. Young probably are the best known and the most important. After these tests the Mechanical Division of the Association of American Railroads produced a comprehensive report on a new standard method of draughting locomotives; this included recommendations for proportioning the details of the smokebox arrangement of the Master Mechanic front end design. The basic idea was the proportioning of the gas passages in relation to the free gas area through the boiler tubes and flues.

For some time past the Locomotive Testing Committee of the British Transport Commission has been giving special attention to front end design, and more particularly to the proportions of the blastpipe nozzle and the chimney. Some results of these important experiments have been made available through the test report *Bulletin No. 6* recently issued. This discusses a series of tests made with the new Standard British Railways class "5" engines. Examination of the draughting arrangements of existing locomotives may have good results; and such has, in fact, been the case, an instance of which is the improvement effected in the performance of the Western Region "King" class. Trials conducted with the British Railways class "5" standard locomotives showed that the evaporational limit of the boiler was 18,000 lb. of water per hour when using Blidworth coal. This evaporation was considered low in relation to the size of the boiler and the deficiency in steaming adversely affected the performance in service when using lower grade coal. Modifications to the grate, giving larger air openings, raised the evaporation to a maximum of 19,000 lb. of water per hour. This, however, was higher when a locomotive was put through some special tests on the plant at Rugby, using three different exhaust nozzles with dia. of 5½ in., 5 in., and 4½ in.

As a result of these experiments, the 4½ in. nozzle has been adopted as standard, for with this the evaporation of 24,000 lb. of water per hour was attained with a firing rate of 4,140 lb. of coal per hour, which marked the front end limit. During each specific test the engine was also

indicated, so that steam consumptions could be ascertained; this in turn would show how increasing exhaust steam pressures would influence the steam rates per i.h.p.hr. These investigations showed that at any rate of evaporation and steam supply the steam rate per i.h.p.hr. was the same, independent of the size of the exhaust nozzle and the resulting back pressures, because of the higher superheat carried by the cylinder feed steam at increased rates of firing and evaporations. This is important, because the increase in evaporation brought with it a proportionately higher power output.

The question arises whether the requisite greater degree of evaporation could have been obtained without restricting the exhaust nozzle, and so avoiding higher back pressures. The fact that the blastpipe and chimney in combination act as an ejector suggests that the form of a blastpipe should resemble that of a steam nozzle. Realising this, the New York Central System adopted a blastpipe designed on this principle after extensive tests with many types of exhaust nozzle. Furthermore, the Furness Railway many years ago, used blastpipes fitted with a diverging nozzle piece. Another useful step might be to fit a basket bridge across the top of the nozzle; this by splitting the exhaust jet might so increase its efficiency as to render unnecessary any reduction in the size of the nozzle. This would be the same in principle as using duplex blastpipes, which effectively restrain the exhaust gases by providing two exhaust steam jets instead of the single jet obtained with the ordinary blastpipe.

Traffic Problems in the Cape

TRAFFIC problems in the Cape Town area were the subject of a paper read to the Cape Peninsula Section of the Institute of Transport recently by Mr. A. A. Fullalove, who gave some details of the contribution made to the suburban transport of Cape Town by the local train services of the South African Railways & Harbours Administration. The three lines concerned, Cape Town-Bellville, Cape Town-Simonstown, and the Cape Flats line, carried 76,259,877 passengers in 1950-51. In 1919-20, the first year for which figures are available, the number was 24,103,023. As a result of the recommendations of the Road Motor Transport Commission (1929) a number of bus services starting from points on the Cape Flats and conveying passengers to the Salt River-Cape Town area, became feeder services to the railways. This step relieved road congestion but, as more than 10,000,000 passengers are carried each year by the bus services terminating at Mowbray Station, and many of these also travel by rail, there is overcrowding on this section of line. There is a disadvantage also in that people living in some fairly populous areas must now use two types of public transport to travel to and from work. In many cases the combination of fares is higher than the through fare would be by bus alone. Mr. Fullalove suggests that some of these bus services could terminate at a station, such as Athlone, on the Cape Flats line. He adds that facilities on that line would need to be improved to the standard obtaining on the Simonstown and Bellville lines.

In the area of the Cape Town terminal the concentration of thousands of pedestrians for an hour or more twice a day creates a considerable traffic problem. About 45,000 people enter and leave the station between 6.30 and 9 a.m. and a similar number between 4.30 and 6.30 p.m.

On the 44 miles of track constituting the three Cape suburban lines there are 31 level crossings involving major or secondary roads. There is no doubt, in Mr. Fullalove's opinion, that these crossings should be eliminated.

Speaking of the Cape Town Foreshore Plan, which deals with the development of the 468 acres added to the city area by reclamation from the sea, Mr. Fullalove mentioned that some 77 acres of the site were reserved for railway purposes, including a station, an administrative block, and a goods depot. The goods depot will be served by a special road system and the new passenger station will have a long frontage facing Adderley Street which is being extended northwards towards the sea. The present somewhat inade-

quate passenger terminus is higher up Adderley Street. The station platforms will be below road level and decked over to provide a parking area for cars.

A Novel Railway Report

(By a correspondent)

THE Northern Pacific Railway Company annual report for 1953 might be mistaken for a new magazine about trains. Beneath the slogan "Things are moving on Main Street of the Northwest," the cover of the report depicts a diesel-electric passenger train and part of a freight train made up of a dozen different types of wagon. The inside pages of the report display a series of photographs giving glimpses of the railway's historic past compared with modern developments. On one page is shown an 1876 train, headed by a locomotive known from the shape of its chimney as a "balloon stacker"; on the opposite page is a view of the luxurious "North Coast, Limited," setting out on its long run from Seattle to Chicago. Such contrasts give a vivid idea of progress since the years when James J. Hill pioneered railway building across the Northwestern prairies.

By 1901 Hill controlled the Great Northern, the Northern Pacific, and the Burlington and so had in his own hands two through routes from Chicago to the Pacific coast via St. Paul and Minneapolis. He set little store on passenger business. What interested him were freight trains and the ton-miles they produced. The three "Hill Roads" remain predominantly freight carriers. The Northern Pacific operated last year 6,580 miles in freight service and only 4,070 in passenger service. Its freight revenue was \$159.3 million, an increase of \$2.8 million on 1952 in spite of a 6 per cent fall in tonnage, because rates were higher throughout 1953. Freight train miles were up 1.8 per cent, but train hours were cut by 4.4 per cent; train speed between terminals rose from 17.5 m.p.h. to 18.6, owing to the larger use of diesel motive power. Last year 25 new diesels were installed, bringing the total number to 159; the number of steam locomotives was reduced by 37 to 585 and will be less at the end of this year as 12 more diesels are going into traffic soon.

Last year's passenger revenue of \$7.6 million was about a twentieth part of freight revenue, but \$463,400 larger than in 1952. Passenger miles increased 8.75 per cent, some new business being attracted by the running of 13.5 per cent more passenger train miles and by the retiming of the "North Coast, Limited," in November, 1952. The management feels that the additional expense incident to the new train schedule has been justified and points out that passenger takings on competitive lines and for the whole country decreased last year. A recession in the first quarter of 1954 has weakened this line of argument; the Northern Pacific lost 17.6 per cent of the passenger revenue for the first three months of 1953, the Great Northern 19.8 per cent, the Milwaukee 20 per cent and all U.S.A. Class 1 railways 11.9 per cent. The operating ratio for the quarter rose to 95 per cent on the Northern Pacific, to 87 per cent on the Great Northern, to 88 per cent on the Milwaukee and 81 per cent for all U.S.A. railways. The Northern Pacific had at March 31 a deficit of \$792,200, compared with a net railway operating income of \$2,936,000 at the end of March, 1952. The Great Northern and Milwaukee finished the quarter with balances on the right side, but reduced by about 80 per cent.

On March 5 Mr. R. Macfarlane, President, Northern Pacific, submitted this novel 1953 report to the Company's stockholders, telling them that prospects for 1954 were on the whole favourable, viewed from the standpoint of a peacetime economy; if traffic fell off, he hoped that the loss of revenue would be offset partially by reduced expenditure. Mr. Macfarlane misjudged the severity of the decline in business and will be disappointed that operating expenses to March 31 rose 0.5 per cent, while

other large railways curtailed working costs—the New York Central by 10 per cent, the Pennsylvania by 13 per cent and the Baltimore and Ohio by 14 per cent.

Probably the quickest way for the Northern Pacific to reduce expenses would be to extend the use of diesel locomotives as rapidly as the necessary financial arrangements can be settled. The Board has authorised the construction of an electrically-operated gravity yard at Pasco, in Washington, which is expected to produce substantial savings, but it will not be completed until 1955. Some 24 modern passenger coaches and sleeping cars are due for delivery this year, but they will be costly vehicles and their arrival may simply tend to swell the passenger deficit. It is hopeless to look for a profit from passenger services which amount to the running of about four train miles per mile of road per day.

This year all the U.S.A. railways are struggling hard to

make ends meet and the 16 companies operating 45,000 miles of road in the far-flung Northwestern Region have an especially difficult task. For the first quarter of the year the Northwestern Region operated at a ratio of 91 per cent, 10 per cent above the ratio for all U.S.A. railways. Since the war the larger companies linking Chicago with the Northwest have striven to provide freight and passenger services comparable with those enjoyed by other Regions blessed with more wealth, denser traffic and a more genial climate. The reward of their enterprise was a deficit of over \$6 million for the Northwestern Region at the end of March; the other 7 Regions of the U.S.A. railway system merely suffered a stiff drop in net operating income. "The promise of Northern Pacific's bright future" was one reason for the presentation of its 1953 report in an uncommon format, but the time of fulfilment is uncertain.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Proposed Trans-Arabian Railway

June 14

SIR,—The note on Iraq on page 600 of your issue of May 28 refers to the proposal for a railway from Baghdad to Damascus or to Amman. In this connection, it may be of interest to recall that a railway alignment from Baghdad to the Mediterranean, passing through the Kingdom of Jordan, was surveyed and staked out on the ground in 1930 and 1931. The length of line in Iraq was 350 miles, running from Baghdad via Hit on the Euphrates and the oasis of Rutba to the Jordan frontier. From here the alignment continued south westwards across the lava country, passing Qasr Asrak and Mafrak, and then via Irbid to the Jordan Valley. The total length in Jordan was 280 miles, but if the railway were to terminate at Amman, the distance from the Iraq frontier would be about 220 miles.

All-in cost of the railway across the desert section was estimated in 1931 at about £9,000 per mile, but prices have, of course, risen considerably since that date. Eventually the trans-desert railway project was abandoned, probably because the economic prospects at that time appeared doubtful. Construction of a railway today should help to link in friendly relationship the countries of the Middle East.

Yours faithfully,

J. E. G. PALMER

Rendel, Palmer & Tritton, 125, Victoria Street, S.W.1

British Railways Diesel Trains

June 16

SIR,—On looking at a plan of the new two-coach diesel trains which British Railways are putting into service in certain districts I was amazed to find that the seats in the coaches are all apparently fixed facing the driving ends of the coaches, and that therefore half of the passengers will have to sit in rows back to the direction of travel.

How any sane person can hope to attract traffic to the railways by means of accommodation of this kind I fail to see. While it is true that in ordinary trains half the seating accommodation is back to the engine, there are reasons for this: in compartment stock, still popular with very many passengers in this country, it is the only possible arrangement, and in open coaches each bay often has, or can have, a table at which four people who may be travelling together may sit. But to make people travel back to the direction of travel without these compensations is fantastic.

Why not reversible seats? Are British Railways so short of money that they cannot consider fitting seats with mechanism that would need a little maintenance from time to time? In the ex-Lancashire & Yorkshire electric trains on the Manchester to Bury line, built in 1916, many of

the seats in the third class and all the seats in the first and former first class accommodation are reversible, and they still work.

If British Railways have nothing better to offer the public than this ridiculous accommodation, they deserve to lose the traffic that still remains to them.

Yours faithfully,

NORMAN N. FORBES

39, Oakdale Road, Liverpool, 22

Longest Chair-Lift in Europe

June 18

SIR,—The Klachau-Tauplitz to Tauplitzalm chair-lift in Austria, is not, as claimed by your overseas correspondent in the June 18 issue, the longest in Europe, though it is the longest in only two sections. The four-section chair-lift from Grindelwald to First, in Switzerland, is both longer (4,354 m.) and has a greater difference in altitude, of 1,105 m.

Yours faithfully,

JOHN RODGERS

The Cottage, 132, Worring Road, Shenfield

Train as Grandstand

June 19

SIR,—I suggest there was nothing unofficial in the use of trains as grandstands on Grand National Day in the past, to which reference is made in the Scrap Heap in your June 18 issue.

In the heyday of the Lancashire & Yorkshire and the London Midland & Scottish Railways, two trains, one each from Manchester and Euston, were shunted on to "the tip" at Fazakerley Junction, so that the occupants could have a grandstand view of Becher's Brook and the adjoining jumps, either from inside or on top of the coaches, or from the ballast. The trains were always referred to by the staff as the "Directors' specials," and it was always understood that all aboard consisted of Directors and officers, with friends specially invited.

The Divisional Superintendent's saloon ran two or three trips from Aintree Racecourse Station to the tip to convey Liverpool shipping magnates and other Merseyside personalities. Everyone on any part of the permanent way between Racecourse Station and Fazakerley Junction during certain hours on the day of the race had to be in possession of a special permit, and hundreds of these were issued; many to representatives of business houses.

Aintree forestalled Basle by 40-50 years and it was a "free do."

Yours faithfully,

J. BOND

Sutherlands, 24, Brookside Road, Fulwood, Preston

THE SCRAP HEAP

Venturesome Birds

Near a Manchester station are two signalboxes, Throstle Nest East Junction and Throstle Nest South Junction. Many years ago, apparently a pair of thrushes built a nest against the line, just below the running surface of the rail. They reared a family with the wheels of the trains running an inch or two above their heads.—From *"The Manchester Guardian."*

Exalted Station

The closing of Palmure railway station on the Dumfries-Stranraer line marks the end of a story which today seems as remote as the less plausible episodes in the *"Arabian Nights."* It was used principally by the local Haroun al Raschid, that Duke of Bedford who lived in the days, well within living memory, when a wealthy man could afford to spend.

The late duke gave up Cairnmore, near Newton Stewart, a little over a year ago. In his father's time an army corps of servants filled the house during the season and a special train travelled from London to Palmure every day carrying food for the guests. There was also the question of water. His Grace did not, for some reason, approve the local vintage, so the train brought drinking and washing water, too, from south of the Border.

It comes as a shock to hear of a

duke who once ordered trains as you or I might order taxis, for it brings with it a realisation of the speed at which the change of our present equalitarian times has come about. The duke's trains have ceased to run but his station is still with us, only now, in 1954, yielding to the times and becoming a public siding.—From *"Scotland's Magazine."*

Good Lunch

None of the meals I have had on the train to Basle could compare with the lunch menu in the *"Cornish Riviera"* express, Penzance to Paddington, on Whit Monday. There was fruit juice, soup, turbot, roast loin of pork with apple sauce, ham, galantine, pork pie, roast or boiled potatoes, carrots, cabbage, three different kinds of salad, pears and rice, apple and plum tart, ice cream and jelly, cheese and biscuits, and coffee. Lunch was 7s. 6d., coffee 6d. extra—8s. for a meal which was hot and excellent. The service could not have been bettered in any hotel.—From a letter to *"The Evening News."*

Tourism in Scotland and Switzerland

Even before I left Scotland for Switzerland I was impressed by the cheapness of the transport bargain it was possible to obtain in Switzerland, though without the institution of a Scottish Transport Commission or such-like

body with special understanding of Scotland's conditions, opportunities, and physical lay-out, it is difficult to see how this advantage could be equalled here . . .

A call to Glasgow's magnificent new inquiry office at the Central Station yielded details and pamphlets of great and attractive variety in the field of day excursions and round trips. I could not find an economic series of progressive journeys for, say, an American who, reaching Scotland through Prestwick or the Tail of the Bank, wished to see Ben Nevis, undertake a short Hebridean trip, traverse the Caledonian Canal by free choice of boat or coach, then travel through the heart of Scotland to Edinburgh and the Borders.

And if we did sell out our tourist holding to the Swiss it is a safe bet the peak of Ben Nevis (and others) would be made available to all by means of a funicular; the run south from Inverness would be made by beautifully fitted out observation cars; and at Perth tourists who wished would be able to travel upon the lovely waters of the Tay as far as Dundee and Broughty Ferry.

Still, in all Switzerland I could find no greater bargain than the 25s. run-about ticket between Ayr and Callander. From a letter to *"The Scotsman."*

"Dear Sir . . ."

Where should we be without those guys,
Pseudonymous and otherwise,
Who collar all the credit for
Those letters to the Editor?
We find their oburgations solemn
In any correspondence column.

These paragons, these *comme-il-fauts*,
Who ventilate vicarious woes,
Loathing to lose the slightest chance
Of breaking a knight-errant lance,
Gratuitously champion
All they can lay their hands upon.

They are not ordinary men,
This Ancient Order of the Pen;
Ensnconed in comfort, high and dry,
At home, they let their broadsides fly.
One wonders, though, what itch
compels
Chaps like "Disgusted, Tunbridge
Wells."

Or that inveterate trouble-breeder,
The one and only "Constant Reader,"
To aim their inky barrages
At things like crowded carriages,
Or start envenomed disputations
About the state of railway stations.

Full many a railway P.R.O.,
Piqued by "Pro Bono Publico,"
Finds to his cost, as time goes by,
Blood pressure reaching a new "high."

May Gabriel write against my name
My solitary claim to fame:
"He had a bent for curious rhymes,
"But never sent them to *The Times*."

A. B.

Ramsbottom Locomotive Presented to the B.T.C.



Mr. R. C. Bond, Chief Officer (Mechanical Engineering), British Transport Commission, driving away the Ramsbottom locomotive presented by Imperial Chemical Industries Limited to the Commission at the Kynoch Works, Witton, on June 4 (see our issue of June 11)

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NEW ZEALAND

Dining Room Services

A curtailment in dining-room services on the North Island Main Trunk line has been announced. This will mean there will be a speeding up of Main Trunk and provincial express trains. The dining rooms at Frankton Junction and Marton are to be closed and at Marton counter refreshment facilities will also be withdrawn.

The patronage at the Frankton Junction and Marton rooms has been poor with passengers showing a preference for light refreshments only.

CANADA

Operating Revenues

Operating revenues of 16 railways totalled \$78,283,505 in January, \$11,442,425, or 12.8 per cent less than in the first month of 1953. Operating expenses fell somewhat less sharply to \$81,877,858 from \$92,115,030, a drop of 11.1 per cent. However, other expense items showed net improvements over a year earlier, resulting in a reduced operating deficit of \$5,644,582 (\$6,548,514).

Freight revenues were down this January to \$62,012,456 from \$73,151,445 last year, but mail revenues were 11.5 per cent higher. Transportation expenses were reduced 14.8 per cent to \$41,070,847 (\$48,211,022), but traffic and general expenses were slightly higher. Tonnage of revenue freight carried was down 15.5 per cent to 11,308,994 from 13,387,559 tons, and average length of haul was off

to 381 from 416 miles, resulting in a 22.7 per cent cut in revenue ton-miles to 4,309,340,000 from 5,574,982,000. There was a 3.8 per cent decrease in the number of passengers carried and passenger miles were down 4.9 per cent with a reduction in the average passenger journey from 89 to 88 miles.

BRAZIL

Railway Deficits

The Minister of Communications & Public Works, reporting to President Vargas, said the problem of federal and state-owned railway deficits was exhaustively examined by the Mixed Brazil-U.S.A. Commission. The Commission recommended converting the railways into an industrial organisation, free of political and bureaucratic influences, under the title of Rede Ferroviaria Federal S.A. The project was submitted to Congress and is still held up in the Chamber of Deputies.

The causes of the deficits, as pointed out by a Special Commission, are: (a) deficient equipment, raising operational costs and involving heavy delays; (b) excessive staff, due in part to deficient equipment, but which could be reduced by 30 and, in some cases, by 50 per cent; (c) free transport of postal correspondence, particularly of goods despatched on approval and payable at destination if accepted, which entails a loss of three to four per cent in revenue; (d) inadequate rates, particularly for freight, increases amounting to 26 per cent since 1948, although wages, exclusive of

emergency bonuses, have increased 49 per cent (these bonuses have added 2,000 million cruzeiros (£40,000,000) to the railways' overall expenditure); (e) indiscriminate wage increases, regardless of ordinary standards and nature of work; (f) existence of small railways with high administrative costs, serving zones of insignificant demographic density; (g) lack of energy and of commercial sense by administrators.

The Commission concludes that these disabilities can be corrected only gradually, by a sound economic policy and the reform of administrative processes.

UNITED STATES

Chicago Terminal, C. & N.W.R.

During May work began on the remodelling of the Chicago & North Western Railway terminal between Canal and Clinton Streets, Chicago. The existing station building has four floors all of which are used for passenger facilities. The first floor is at street level, and contains booking and other offices, and stairways lead up from it to the waiting rooms, concourse and platforms at second-floor level. In the remodelled building all passenger facilities will be concentrated on the second floor adjacent to the platforms, the additional accommodation being provided by a 3,000-sq. ft. additional floor area, obtained by extensions over some of the staircases, which are being replaced by escalators. The whole of the 25,000-sq. ft. first floor will be let out to firms as a shopping centre.

The equipment will include "electric-eye" automatic control of main doors, and a two-faced train indicator visible both from the concourse and the waiting hall. The work is estimated to cost nearly £180,000, but as well as providing more efficient service as a result of all passenger facilities at platform level, it is expected that the sums secured from the shop leases will prove to be substantial, and are considered to be a major factor in justification of this expenditure.

SWITZERLAND

New Stock for Federal Railways

Orders for 166 coaches and five driving trailers are to be placed by the Federal Railways. All the coaches will be of the usual light steel construction and of the double-bogie vestibule type with central gangway; 36 will be 2nd-3rd composite class coaches (BC4Ue type) and the rest third class coaches only (C4Ue type). This type of third class coach with central entrance only was ordered for the first time in 1952, and the sixty coaches which have been placed in traffic so far have given satisfactory service. It is intended to introduce further improvements in this type of

Canadian Demonstration Wagon



Box car built by the C.N.R. to show railway staff and consignors improved handling and loading of freight. Through the "picture window" side they will be able to observe the effect of proper stowing and packing

coach and to consider it as standard as from 1955.

The five driving trailers are intended for shuttle trains on main lines worked with the light Re 4/4 type of locomotive. Shuttle trains of this type operate between Lucerne, Zurich and Schaffhausen. These driving trailers (FT4Ue type), incorporating a luggage compartment, have been found particularly convenient on trains handling considerable luggage and express goods traffic.

Grisons-Germany Through Coaches

Since the summer of 1952 through coaches have operated between Hamburg and Chur via Constanza and St. Margrethen in accordance with the decisions of the 1951 International Timetable Conference. The patronage has been found to be inadequate and the coaches will not run this summer.

FRANCE

Standard Hydraulic Jack

A new hydraulic jack has been adopted by the Permanent Way Department of the National Railways as standard for lifting track in connection with the measured shovel packing method of maintenance. The jack and operating lever weighs only 53 lb., and can be conveniently handled and used by one man.

The jack has a normal lifting power of five tonnes and can raise track through a distance of approximately 6½ in. Jacks used for this purpose must be capable of automatic collapse on the approach of a train, to avoid any variation in track level; the jack in question reverts to its lowered position under a load of six tonnes.

By means of a special attachment weight 8 lb. the jack can be used for the transverse movement of track where it is desired to adjust alignment.

Transport of Glass

An employee of the S.C.E.T.A., the road transport subsidiary of the S.N.C.F., has devised a new process for the protection of glass during transit, which is now being produced under license by the Société Saint-Gobain. Known as "Lien-Cadre," it consists fundamentally of two felt-lined metal clamps which are placed around a number of sheets of glass, one at each end. A swinging toggle with wing nut enables the clamps to be tightened around the glass. The S.N.C.F. is studying the possibility of adopting the device in its own general stores.

DENMARK

Summer Services

The summer timetable shows an increase in the number of international trains taking the Gedser-Grossenbrode route. Three ferryboats, the *Danmark*, the *Deutschland*, and the Great Belt vessel *Dronning Ingrid*, altered to suit the berths at Gedser and Grossenbrode, are now engaged on this service.

The "Scandinavia-Italy," "Basle," "Alpen," "Scandinavia-Holland," "North West," "Hamburg," and "Adria" expresses all travel by this route, and there is a new service between Copenhagen and Hamburg provided by a three-car diesel set of the German Federal Railway. As this train can run straight on and off the

ferry a timing of slightly over 7 hr. has been achieved. The "Nord" express and the "Paris" express, 2 hr. faster southbound, use the Great Belt route.

"Nordpilen," a diesel-train runs between Frederikshaven, in Northern Jutland (connections by sea to Oslo and Gothenburg) and Flensburg, with through portion for Hamburg. There is a new service between Nyborg (Funen) and Hamburg. The Esbjerg-Harwich service is similar to that of last year, with three sailings a week each way. There are now six instead of four daily connections between Copenhagen and Stockholm.

AUSTRIA

Diesel Trains for Vienna Urban Service

The Minister of Transport has approved a scheme of the Federal Railways to introduce an urban-type service with diesel cars, possibly to be followed by electrification, on existing lines from Floridsdorf via Hauptzollamt and Südbahnhof to Meidling. Because of repair work to be carried out on existing stations and bridges, it will be about three years before the proposed service can be introduced.

Electrification

At a recent lecture at Innsbruck, Doctor-Engineer Koci, an Austrian Government official, announced the forthcoming electrification of the Bregenz-Lindau line. Other railways stated to be included in the electrification programme are the Südbahn, Gsäusebahn, Pyhrnbahn and the approaches to Erzberg.

Publications Received

The Story of New Street. By F. W. Grocott. Issued by British Railways, London Midland Region, and obtainable from the District Publicity Representative, British Railways, London Midland Region, 64, Carlington Street, London, S.W.1. 8½ in. × 5½ in. 16 pp. Price 1s.—Mr. Grocott has written an admirable brief history of New Street Station, Birmingham, to commemorate the centenary of its opening on June 1, 1854. He begins with a concise account of the coming of the railway to Birmingham, leading up to the amalgamation in 1846 which formed the L.N.W.R. and the decision of its constituents to build a new through station to obviate change of train at the Curzon Street terminus by passengers bound from London to the North. The station cost half-a-million and took seven years to build. It was covered by what was then the largest single span roof in the world. New Street was enlarged in the 1880s to become the largest station in Britain, and it remains the fourth largest in the London Midland Region. It suffered much bomb damage during the war; because of that and deterioration, the overall roof was replaced in 1948 by in-

dividual platform awnings. The book has a clear map of the Birmingham area showing dates of openings and an interesting selection of photographs of New Street, past and present.

Locomotives of Many Lands. By Peter Allen. London: Locomotive Publishing Co. Ltd., 88, Horseferry Road, S.W.1. 8½ in. × 5½ in. 101 pp. Illustrated. Price 18s.—In the course of his journeyings on business for a large industrial group, Mr. Peter Allen has observed and photographed locomotives and working in many parts of the world. In this most individual book he displays what he calls either the pick or those with "some element of local colour or strangeness" of his collection covering twenty-five countries. He has a turn of phrase in the descriptions as original as his choice of subjects. Variety is the keynote, from the Kerr Stuart 0-6-0 tank outside the Niño Jesus sheds of the Madrid-Aragon Railway to the "hideous" Hungarian-built 4-8-0 on the "Simplon-Orient Express" at Zagreb and the Danish Atlantic at Elsinore. Mr. Allen is a confessed traditionalist and apart from the diesel-hauled "Morning Hiawatha" at

Milwaukee—contrasting on the same page with a 2-4-4 tank and train of the 2-ft. gauge Edaville Railroad in Massachusetts—and four photographs of electric locomotives and trains in Switzerland, Sweden, Austria and Holland, he is faithful to steam.

The Swansea & Mumbles Railway. By Charles E. Lee. South Godstone, Surrey: The Oakwood Press. 8½ in. × 5½ in. 50 pp. Illustrated. Price 7s. 6d.—When Mr. Charles E. Lee's "The First Passenger Railway," a history of the Swansea & Mumbles Railway, was published in 1942 by the Railway Publishing Co. Ltd., a predecessor of Tothill Press Limited, the late Sidney Garcke called it in his preface "this excellent summary of an unique enterprise." The Mumbles line indeed has more than one claim to uniqueness, as is clear from an editorial note in this issue. The chief is that it is 150 years old this month, and is therefore by far the oldest passenger line in existence. The present book, which thus makes a timely appearance, is a second edition of the original history. The text has been revised and supplemented and two interesting new illustrations have been added.

Transport and the Schuman Plan

Elimination of discriminatory rates on coal and steel

(By a correspondent)

ON April 18, 1951, the foreign ministers of Belgium, France, Italy, Luxembourg, the Netherlands, and the German Federal Republic initialled the draft treaty resulting from the so-called Schuman Plan. During the succeeding two years the various Governments ratified the treaty, and the European Coal & Steel Community became effective on July 25, 1953. An aspect of the treaty of the utmost importance to the European transport industry is the effect of Articles 4 and 70, designed to define the economic principles to which member States would have to subordinate the transport of coal and steel in their respective countries.

The two articles called for the prohibition of all practices hampering the buyer in the free choice of a supplier in the common market, including, *inter alia*, Customs' duties, Government subsidies and discriminatory transport rates whether between different traders or different countries. It was specifically laid down that rates applicable to internal should be applicable to international transport. While the transport requirements to some extent had been covered in the Berne Convention, the railways had not been compelled to respect the rather vague commitments entered into by Governments where these were likely to be detrimental to the national economy, and something more precise seemed necessary.

Commission for Study of Transport

The High Authority set up before full ratification of the treaty to carry out the provisions of the treaty was given, *inter alia*, the duty of setting up a commission to study coal and steel transport and to make recommendations; the studies of this commission, which was appointed for a period of two years, were to be carried out within the time limits shown: (a) Elimination of discriminatory practices—time limit three months. (In addition, measures recommended should go into effect not later than the time of creation of the common market for coal); (b) establishment of direct international rates based on total distance and with an element of taper—time limit two years; and (c) examination of prices and conditions of moving coal and steel by different forms of transport with a view to co-ordination to the extent necessary for efficient operation of a common market, taking into account the real cost of transport—time limit two years.

In drafting the treaty the Luxembourg Railways were considered to be subject to special considerations, and the commission was, therefore, asked to propose such exceptions as it thought should apply to Luxembourg. Provision was made also for other excep-

tions. In a report dated January 10, 1953, the High Authority itself pointed out that what was of importance to industrialists purchasing coal and steel was the delivered price including transport costs, and that any scheme to control the distribution of coal and steel through an international price policy would be nullified unless some control was exercised over transport costs. It was said that transport charges within the territory covered by the Coal & Steel Community, which represent as much as 20 to 25 per cent of the selling price in the case of rolled steel, varied between parity and 250 per cent, and that, while variations resulting from geographical factors were inevitable, those caused by political reasons must be eradicated.

Examples of Differentiation

An example of differentiation is the pre-treaty transport charges on Lorraine iron ore by rail to destinations in northern France and Belgium. Internally in France, from Sancy to Azincourt, 284 km., the rate used to be French frs. 631 a ton; from Sancy to Marihay in Belgium, a total distance of 211 km., the rate, in identical transport conditions, was French frs. 850 a ton. The latter figure was made up of francs 328 a ton from Sancy to Ecouvies on the French/Belgian frontier (47 km.) and francs 522 a ton from Ecouvies to Marihay, 164 km.

Another example is the supply of coke by rail to a steel mill at Homécourt in France. From Lens, in France, 340 km., the rate was francs 776 a ton; coke supplied from Gelsenkirchen in Germany moving via Nennig Fre on the German/French frontier to Homécourt, a total distance of 363 km., used to be liable for charges at the rate of francs 2,462 a ton. This was made up of francs 1,727 a ton from Gelsenkirchen to Nennig Fre, 302 km., and francs 735 a ton from Nennig Fre to Homécourt, 61 km.

These two examples show how handicapped international traffic used to be in comparison with internal traffic. The problem which faced the commission on transport was serious. The existence of a supranational authority is a new concept of major significance to transport. The difficulty of deciding when discrimination exists is considerable. The bases of rates differ from country to country; for example, in Germany the rate depends primarily on value, whereas in France density of loading is a fundamental of rating. In deciding whether certain rates should be increased or decreased, regard must be paid to the effects on the rates for other commodities. Geographical features must be allowed for if rates are to be remunerative, whilst,

until a direct international rates' system can be evolved, the change over from one system of charging to another at frontier points must to some extent continue to affect the levels of through rates; in particular, mileage must be computed separately each side of the frontier, thus precluding full advantage from any element of taper.

Full information on the activities of the commission is only available up to the middle of 1953. By then it had been able only to deal with the first of the studies delegated to it, the elimination of discriminatory practices, but definite progress had been made. The magnitude of the task prevented it being fully completed within three months, but by that time nine cases of discrimination had been dealt with and appropriate corrective action taken; five further cases were successfully handled subsequently, and investigations into others of comparatively minor importance are still in hand.

Revised Railway Rates

A good example is the unification of Belgian railway rates for iron and steel products exported through Antwerp. Henceforth, the same rates will be applicable in Belgium to products from France and the Saar as to those from Belgian and Luxembourg sources. The following figures illustrate the resulting changes in through rates:

From	Distance	Through rate per ton	
		Former	New
	Km.	(In Belgian francs)	
Athus (Belgium) ...	254	184	222
Rodange (Luxembourg) ...	257	230	268
Mont-St.-Martin (France) ...	260	317	293

The commission has also eliminated discriminatory factors in railway rates for Saar, Lorraine, Belgian, and Dutch coal to Austria via German ports on the Upper Danube; for Lorraine and Luxembourg iron ore imported into Germany; for Luxembourg iron and steel products in transit through France; for iron and steel products from all sources in transit through German seaports; and for merchandise of every kind imported into France in complete train loads.

The main work of the commission, leading to action by the High Authority, has up to now been on railway rates. Road transport is not of great importance in the movement of coal and steel, whilst transport by inland waterway has raised special problems. On the Rhine, for example, the effect on the Mannheim Conventions has to be taken into account where changes in rate levels are envisaged. At the same time some ele-

ments of discrimination in canal tolls, harbour dues and tugboat charges have been abolished at the request of the High Authority.

Future Activities of Commission

The work of the commission in the future is likely to present still greater problems. Only preliminary work has been undertaken on planning direct international railway rates or the co-ordination of the rates chargeable by the different forms of transport. The existing systems of charging are being studied and compared, and the problem assessed, to ascertain how the essential principle of the Coal & Steel Community can be brought about in so far as transport is concerned. This principle is that comparable price conditions must exist for consumers in comparable situations. To effect this a system of rates will have to be established which will in effect do away with internal borders within the Community's territory. Such a standardisation of rates between the different railways will have to be co-ordinated

with similar adjustment of the rates of the other forms of transport; otherwise competition might lead in some cases to the standardised railway rates being too high or too low.

Autonomous Transport Authority

The answer to the question whether it might not have been better to have set up an autonomous transport authority within the European Coal & Steel Community instead of leaving transport problems to be handled by a High Authority designed to specialise in questions relating to coal and steel, is that transport is not an end in itself, but the technical medium through which production is distributed. The prosperity of transport, moreover, is inseparable from general developments in economic activity. Essentially the adjustment of coal and steel rates was entrusted to the High Authority, as it was the only international body possessing supranational powers; other organisations such as the International Union of Railways (U.I.C.) and the Inland Transport Committee of the

Economic Commission for Europe, have done much to co-ordinate European transport, but they have not had the legal power to enforce decisions on rate questions.

The transport clauses of the Coal & Steel Community treaty have opened up new possibilities of co-operation between European transport administrations. Railway administrations must have found it difficult to accept the need to make fundamental changes in the charging arrangements for coal and steel and to meet new trends of traffic flow, at the behest of an outside body. Yet, if purely national considerations are put aside, the direction of basic materials into the most economic channels, without regard to international frontiers, must ensure the most profitable use of available resources with ultimate advantage to every nation making up the European Coal & Steel Community and to the transport undertakings serving those nations. Time will show whether its full implementation can be realised and national prejudices overcome.

Track Maintenance and Station Buildings

Civil engineering questions discussed at the recent International Railway Congress

TWO questions were discussed by Section 1 of the International Railway Congress at the Sixteenth Session in London last month, under the Presidency of Mr. J. C. L. Train, Member of the British Transport Commission. Question 1 concerned the maintenance of permanent way and comprised the organisation of the work, the use of special vehicles for recording faults, mechanisation and the importance of tracks alongside the railway for the movement of men and equipment.

The reports prepared by Monsieur Feyrabend (France), Dr. Schramm (Germany), and Mr. Clausen (Denmark) and discussed in *The Railway Gazette* of February 5, May 14, and January 22 respectively, were summarised by Dr. Schramm, the Special Reporter, and these summaries or conclusions were presented for discussion by the Section.

There were 14 conclusions in all on this subject, some of which were adopted without amendment while others gave rise to lively discussion, and in some cases the President appointed a sub-committee to re-draft the text which was subsequently submitted to delegates for approval or further amendment.

Mechanisation of Track Maintenance

Discussion ranged round the question of mechanisation, the optimum number of men in a length gang, the employment of contractors and the carrying out of extraneous duties such as the relief of level crossing keepers

and, of course, the necessity for the most rigid economy consistent with carrying ever faster and heavier traffic in comfort and safety.

Mechanisation seemed from the discussions to be assuming in all countries an ever-increasing importance in that it tended to produce better and more uniform maintenance, effected a financial saving, and released manpower for other important work. While it already is applied on a large scale to major renewal operations it was considered that very careful consideration must be given with regard to its application to day to day maintenance in order to avoid extravagance.

Organisation of Length Gangs

An interesting question was raised in connection with the organisation of length gangs, namely the use of mobile gangs, presumably for non-track work in conjunction with small gangs confined to actual track maintenance. Trials are being made at the present time on British Railways along these lines.

A Swiss delegate considered that in countries like his own, which are subject to severe winters, the employment of contractors for maintenance enabled work to be concentrated in a few months of the year.

The importance of vehicles recording faults in the track was stressed in that their use allowed of maintenance work being concentrated where the necessity was greatest.

Question 2 dealt with the modernisation of station buildings and the

methods of financing such works, also the standardisation of unit construction. Dr. Curtis (Great Britain) as Special Reporter, summarised his own report and that of Mr. Bogarim, Portugal, the subject of articles in our issues of January 29 and March 5.

The method of financing modernisation projects did not give rise to much discussion. It appeared that, in general, maintenance and repairs are charged to revenue and improvements to capital account.

A number of railway administrations take into account the earnings from ancillary services, but except at large stations the amounts involved are not of great importance. Contributions from public authorities to station reconstruction schemes are of limited extent, except where such work is carried out directly for their benefit.

The question of making use of stations as commercial centres and as connection points with local bus lines and the possibility of their use as terminals for airports and as landing sites for helicopters was discussed.

The standardised unit construction, it was considered, appears to be the answer to a need for simple structures which can be quickly and economically built, easily dismantled and easily enlarged or adapted. It was not considered that standard unit construction need destroy initiative among technical staffs.

The conclusions reached in Questions 1 and 2 after agreement by the Section were submitted to a plenary session of the Congress for ratification.

New Underground Lines in Tokyo

Alleviating congestion in central area of city

IN terms of route-mileage the operation of underground railway lines in Tokyo is not of major importance. At the end of 1953 the Teito Rapid Transit Authority, the only operator of underground lines in Tokyo, worked only one section of line between Shibuya in the south-west suburbs and Asakusa in the north-east, nine route-miles in all. This line, which runs under Ginza Street, one of the most important streets in Tokyo, is, nevertheless, a vital link in the city's transport system giving much needed relief to the overworked buses and the surface electric trains of the Japanese National Railways.

Many private electric railways serve the outer suburbs. They terminate some five or six miles from the centre of the city and do not penetrate the business quarters. Dwellers in the suburbs who work in the city change over at the private railway termini either to buses, the electric services of the Japanese National Railways, or the

underground lines of the Teito Rapid Transit Authority.

Up to the war, transport facilities in Tokyo were adequate, but during the war large numbers were compelled to move into the suburbs, thus affecting the flows of traffic.

Effect of War on Traffic

With postwar reconstruction more and more passengers wanted to travel to and from the business quarter daily, and the existing facilities, including the electric services of the Japanese National Railways, were overtaxed. Congestion was particularly bad around Ikebukuro Station on the Yamate loop line of the Japanese National Railways. It was decided, therefore, to construct immediately a new underground line from Ikebukuro in the north-west to Ochanomizu in the centre of the city, with later extensions to Tokyo main-line station and thence westward to Shinjuku.

Construction of the Ikebukuro-Ochanomizu double-track section began in April, 1951, and the line was officially opened by Mr. S. Suzuki, President of the Teito Rapid Transit Authority, on January 20 last. The new line is 4.1 miles in length, of which 1.1 miles are surface track and three miles in tunnel. The underground section was constructed on the cut-and-cover principle; the covering between the roof of the tunnel and the road surface is on the average 8 ft. 2½ in. thick. The work was carried out without difficulty, as soil and drainage conditions in this part of Tokyo are very favourable. So that interference with existing property should be reduced to the minimum, temporary supports were needed for some 80 houses during the course of the tunnelling.

Rail of 50 kg. per metre (100 lb. per yd.) section was used. The minimum radius of curvature is 180 m. (9 ch.), and the ruling gradient is 3.3 per cent (1 in 30). There are six stations in the section, including both termini, all illuminated by fluorescent lighting. It was necessary to construct two new transformer stations, with a total capacity of 4,500 kW.

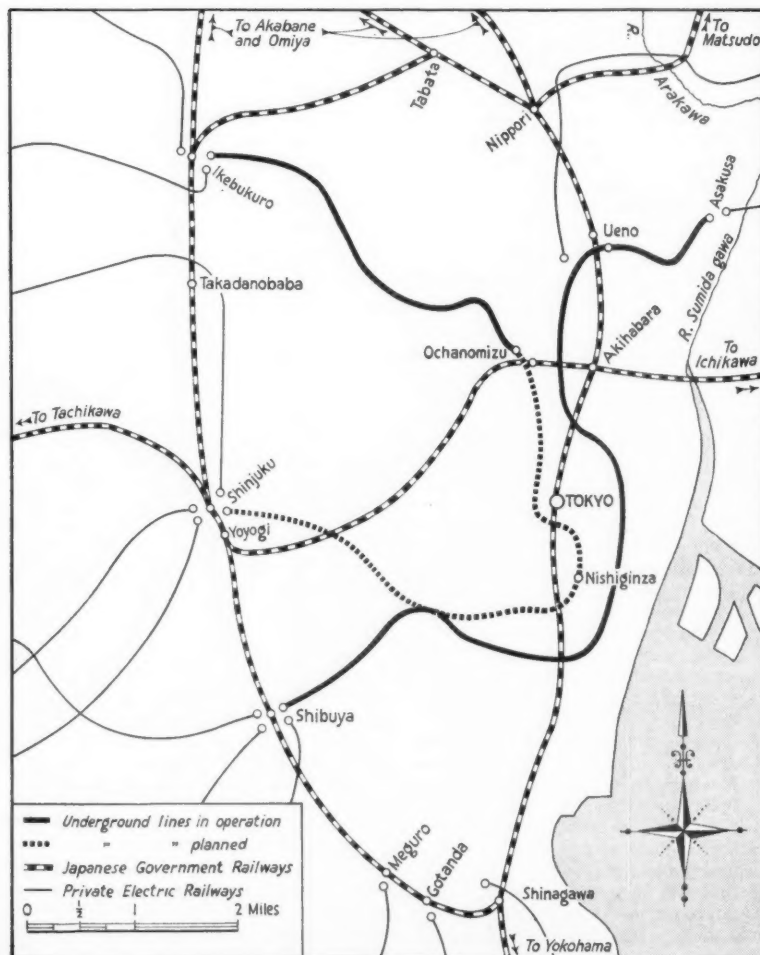
Rolling Stock

The new section, in common with the earlier underground line, is of 4 ft. 8½ in. gauge and electrified at 600 V. with third rail current feed. Passenger cars are all motor units, equipped with four 100-h.p. motors and dynamic braking. Cars are 59 ft. long and 9 ft. 2 in. wide, and are of welded construction; externally they are painted red with a wide band of stainless steel, bearing a wave pattern, along the centre of each side.

Motors are of the high-speed type and fully springborne. Vibration and noise are controlled by the design of the bogie springs with rubber and coil dampers. The electro-pneumatic control system provides 18 notches, including five with a high current rating for initial acceleration and braking. Acceleration is at the rate of 3 ft. per sec.² and normal retardation at 3.6 ft. per sec.² constant acceleration and a maximum retardation of 6 ft. per sec.² can be maintained by means of a compensating device, regardless of load fluctuation. There is only one brake handle controlling both the air and dynamic brake; movement of the handle normally operates the dynamic brake, but if the latter should fail the air brake is automatically switched in.

Lighting inside the passenger cars is fluorescent at 200 V., 120 cycles a.c., giving an illumination of 250 lux. Latest stock incorporates an electric fan in the ceiling.

Because of the short length of the section opened on January 20 only three-car trains are at present operated, with



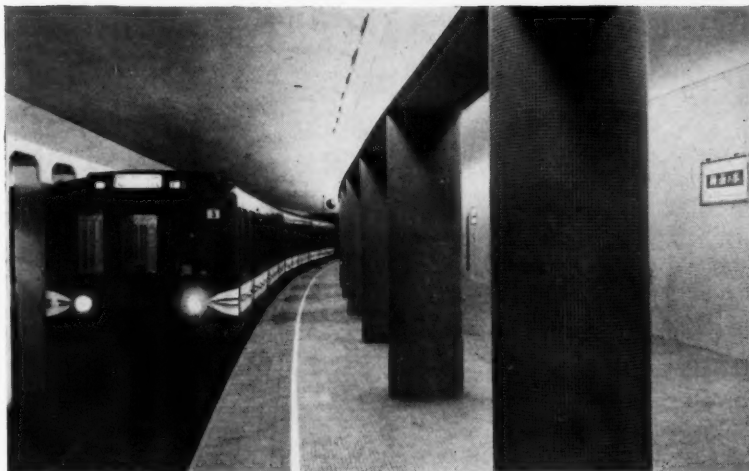
Lines serving Tokyo and immediate suburbs

a 3½ min. headway during the peak period and a 4 min. headway during the rest of the day.

Construction costs of the new line from Ikebukuro to Ochanomizu amounted to 5,300 million yen (£5,250,000). The work was financed mainly by State loans, but part of the capital was obtained by a bond issue.

Further Extensions

Construction has begun of the second section of the new line from Ochanomizu via the central main line station to Nishiginza. This latter station lies in the heart of the city area and the new extension is expected to lead to a great increase of traffic. When this two miles of additional line is opened in about two years time six-car units will operate throughout from Ikebukuro to Tokyo main line station and Nishiginza. The section will be completely underground, but its construction is likely to present difficulties as the soil is not as stable in this part of Tokyo. Later, the line will be extended again to Shinjuku, necessitating an additional four miles of underground line. A connection will



Train at Ochanomizu Station, showing fluorescent lighting

also be made with the existing underground line from Shibuya to Asakusa.

In addition Government approval has been obtained for the construction, as a long-term policy, of some 35 miles of

additional line, part of which is likely to be underground and part surface line. The scheme in hand will more than double the 1953 route-mileage of underground railway in Tokyo.

Hydraulically-Operated Vertical Press

*Of 120 tons maximum pressure,
with detachable front press table*

AS a result of their success in the Canadian market with their 100-ton vertical hydraulic press, specially designed for cold bending 24 in. by 7½ in. rolled-steel joists, the Finlay Conveyor Co. Ltd., of Newport, Mon., has evolved a vertical hydraulic press with a ram pressure of 120 tons.

Design Features

The machine has been designed with a view to robustness and adaptability, and consists basically, of a fabricated gap frame with a 48 in. square table, ram and cylinder assembly with spring return, and a three-plunger pump unit, with direct-coupled 10-h.p. electric motor. A feature of the press table is that it is made with a detachable front section to allow clearance immediately in front of the plate die for work with reverse bends. When the detachable section is in position, 16 sq. ft. of the surface is available for fixing dies and bending-blocks.

The movement of the ram is controlled by foot-treadle or hand-lever, and a stroke adjusting valve is provided for exact setting of the ram travel up to a maximum of 15 in. The return stroke of the ram can also be set by means of an adjustable collar on a guide rod fixed to the ram head.

The ram head is machined with a spigot register for accurate alignment of tools and dies, and also to provide 90 deg. alternative mounting positions,

The standard model equipment, incorporates 48-in. plate bending blade and bending-block. A two-way plate bending die 48 in. long is also standard equipment, and can be secured on the frame table in alternative 90 deg. positions.

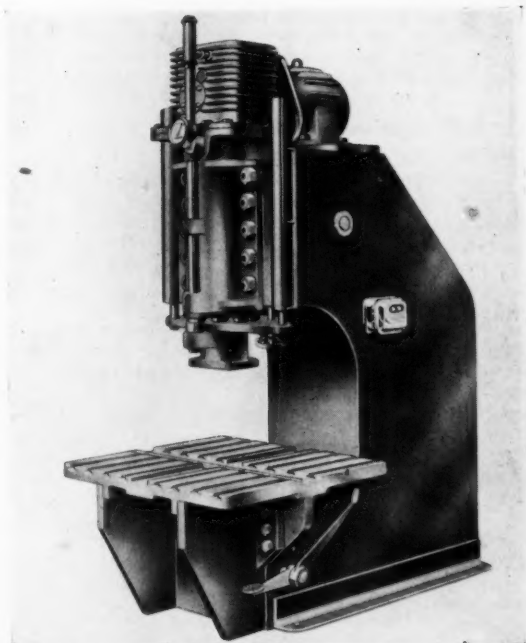
Hydraulic System

The hydraulic system includes a spring-type safety valve and a pressure gauge graduated in tons and kilograms. The hydraulic medium is a standard grade of light oil contained in the cistern which houses the pump unit, a depth gauge is provided for oil checking. The hydraulic unit, together with the direct-coupled 10-h.p. motor is mounted on the top of the press frame.

The motor is controlled by a push-button starter, located in the frame of the machine.

The hydraulic press has a maximum

ram pressure of 120 tons, and a ram stroke of 15 in. The downward and return stroke speed is 30 in. and 60 in. per min. respectively.

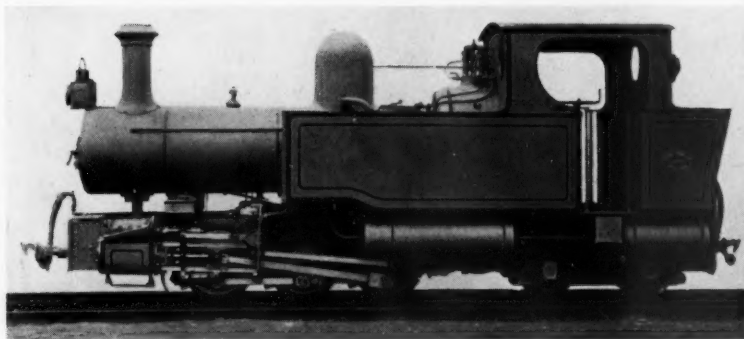


Finlay 120-ton hydraulic press; the electrically-operated unit is shown mounted on the top of the machine

The Advantages of Articulation—1

Rolling stock designed to facilitate curving

By George W. McArd



Hunslet 0-6-4 narrow-gauge side tank locomotive

ALTHOUGH relatively few articulated locomotives are in evidence on British Railways, it is interesting to note that the principle of articulation as applied to locomotive design was discovered quite early in the development of steam traction, and the history of this class is a clear record of the survival of the fittest.

Although designs for this type of engine have been many, the number of types in service today is very small. Historical comments generally are omitted from this survey, which is confined to an examination of the articulated class as represented on various railway systems, and the advantages and potentialities of the design most likely to outlive its rivals.

Advantages During Curving

The articulation of engines and also carriages was originally adopted to facilitate curving, and locomotives of this type have been specially useful on the narrower gauges. An excellent example is the Hunslet 0-6-4 type side-tank locomotive built for the 2-ft. gauge North Wales Narrow Gauge Railway. The engine has cylinders $9\frac{1}{2}$ in. dia. \times 14 in. stroke, coupled wheels 2 ft. 4 in. dia., and a total loaded weight of 18.5 tons. The boiler, cab, tanks, and bunker are carried on two bogies, the

driving unit and the carrying truck. Steam and exhaust pipes are provided with flexible joints, and the engine did excellent duty on the highly curved track.

Articulated Carriages

Articulated coaching-stock has given good service on many lines, possibly one of the earliest in Britain to adopt it being the former G.N.R., whose articulated stock was very popular on the East Coast route between London and Edinburgh. Riding is easier than with buffered stock, and the risk of buffer lock and broken connections—couplings and pipes—is entirely eliminated, the absence of swing (due to the overhang of coaches in the non-articulated train) being particularly noticeable when crossing the vestibule connection.

Not only are the advantages experienced in operation, but the capital cost of articulated stock is lower since fewer bogies, including wheels and axles, springs, brake gear, and so on are necessary, and the absence of these parts is reflected advantageously in the servicing charges, and running costs through the lower weight to be hauled.

From the locomotive standpoint articulation has many advantages for all gauges, although formerly it was regarded as more especially valuable for

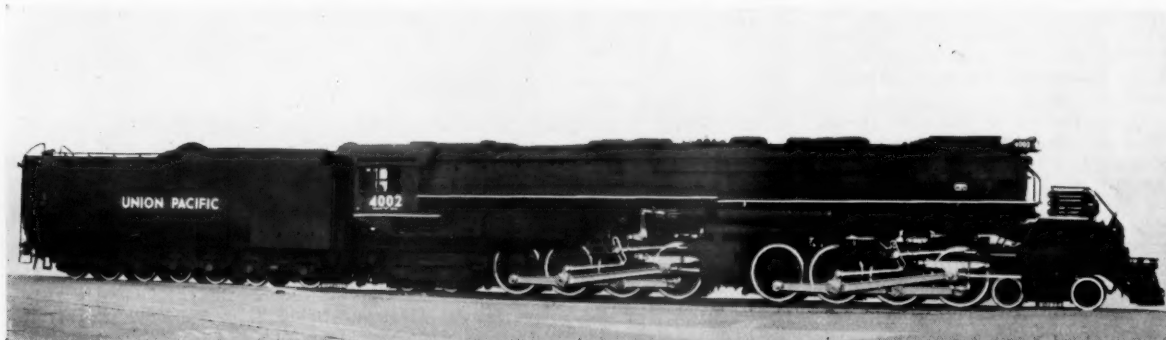
the narrower gauges—3 ft. 6 in., metre, and below—on account of the sharp and numerous curves involved. Experience has proved, however, that an articulated engine in which the individual driving bogies duplicate the cylinders, coupled wheels, rods, and so on, of one of the railway's own classes of orthodox locomotive, can haul more than twice the load of the normal type of engine comfortably, and therefore double the capacity of the line in that section.

In several early designs the practice was adopted of coupling two tank engines together with their cab ends adjacent, and it is interesting to recall this fact when remembering that this is precisely what is being done daily in the realm of the diesel-electric locomotive, two, sometimes three, of these machines being run close-coupled and controlled by a single crew in the leading cab. British Railways "10000" class diesel-electric locomotives have operated heavy Scotch expresses by running in tandem, and the following table gives some interesting figures relative to these machines and a Beyer-Garratt articulated locomotive of approximately equal power:—

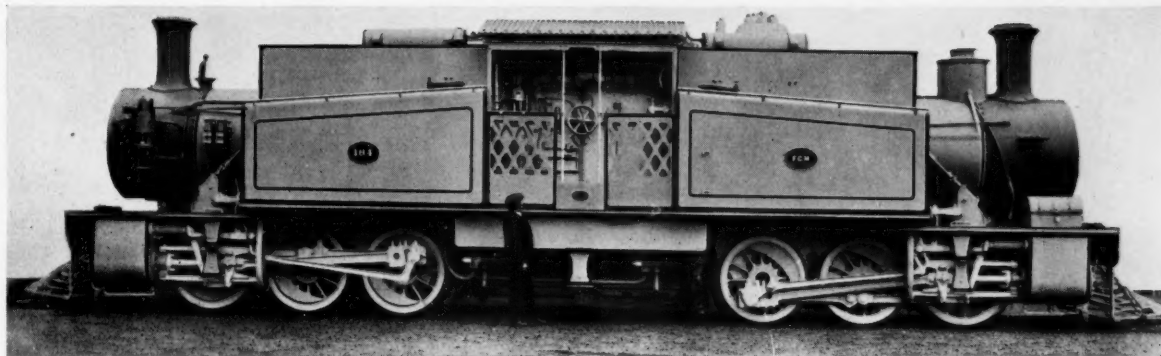
	Two B.R. diesel-electric "10000" class locomotives	One Beyer-Garratt for Algerian State Railways
Length over buffers	122 ft. 4 in.	94 ft. approx.
Tractive power (lb.)	82,800	65,960
Horsepower	3,200	3,788
Total weight working order (tons)	243	212.6

The tractive power figure of the Beyer-Garratt locomotive could be improved appreciably if desired

The values for British Railways "10000" class as indicated are for the two vehicles running together, and the horsepower for the Beyer-Garratt is Cole's figure. Whether on the basis of lb. tractive power per foot run, in which the measure of the two machines is 677 and 701 respectively, with an easily



Union Pacific Railroad 4-8-8-4 Mallet locomotive built by the American Locomotive Co. Inc.



Fairlie engine built for the Mexican Railway by the Vulcan Foundry

possible figure of 800 for the Beyer-Garratt, or h.p. per ton of total weight, namely, 13.2 and 17.8 respectively, the steam locomotive scores in all respects. If criticism be offered on the score of acceleration, this feature does not enter into the question for long distance express work, providing the engine can start up a heavy train with reasonably good acceleration.

With a locomotive such as the Beyer-Garratt, though acceleration is not so rapid as can be obtained with electric traction, it is definitely of a higher order than is possible with normal locomotive stock, since the former has twice the number of driving axles and double the adhesive load. Incidentally the steam locomotive retains the advantage of availability for use in any section of the system, where a straight electric unit is tied to those areas having the third rail or overhead wire. The articulated steam locomotive in question has equal advantages with the diesel-electric unit at terminal stations, as it operates equally well in each direction, and dispenses with the services of a turntable.

Outstanding Features

When considering the subject of this review, the outstanding features expected in the ideal articulated locomotive would include (a) good riding qualities at all speeds on curves and straight

track, (b) ability to negotiate sharp curves, including reverse curves, (c) full tractive power available while traversing reverse curves, (d) increased adhesion and relatively high tractive power with low axle loads, (e) simplicity in design and form of entire boiler unit, (f) unlimited space for boiler and firebox design, with perfect access for maintenance staff, (g) cylinders, rods, valve gear, and so on, should duplicate with corresponding orthodox engines whenever this can be arranged, (h) ample accommodation for fuel and water, and (j) correct location of drawgear, that is, on the driving unit.

One of the most important features in any locomotive of this type is the position of the articulated points relative to the wheel base, a wrong location having a detrimental effect on the wear of driving wheel flanges, the transmission of power at the rails, and the safe riding of the vehicle. Another factor concerns the freedom of the bogies to swing on their centres freely, and in several earlier designs these units were restricted by lack of care in the design of pivots and flexible connections—pipes, reversing gear, and brakes—but by virtue of the large number of this class now in service, designers have gained considerable experience, and can now safeguard the operator completely from every angle.

Perhaps the first locomotive to have a really successful issue was the articulated engine built in 1866 to the designs of Robert Fairlie. Subsequent designs were greatly improved, and many of these were supplied (by different builders) to the Mexican Railway. Conditions on this system are severe, with grades as stiff as 1 in 25, and 5 ch. reverse curves. Most of the Fairlie type engines have the 0-6-0 wheel arrangement and a central firebox with a boiler barrel and smokebox at each end, front and rear, of the firebox. The driver stands on one side and the fireman on the opposite, the equipment for each member being placed accordingly. In the most powerful type the total weight, all of which is available for adhesion, is 138 tons, the tractive force at 75 per cent boiler pressure 52,000 lb., the grate area 48 sq. ft., and the coupled wheel diameter 4 ft. The Fairlie is reputed to be an easy-running locomotive, its purpose being mainly that of heavy haulage on severely curved and graded lines.

In 1925, the North British Locomotive Co. Ltd. built for the South African Railways a number of modified Fairlie engines in which many changes were introduced from the earlier locomotives bearing this name. A normal design of boiler is supported on a frame structure which extends the full length of the

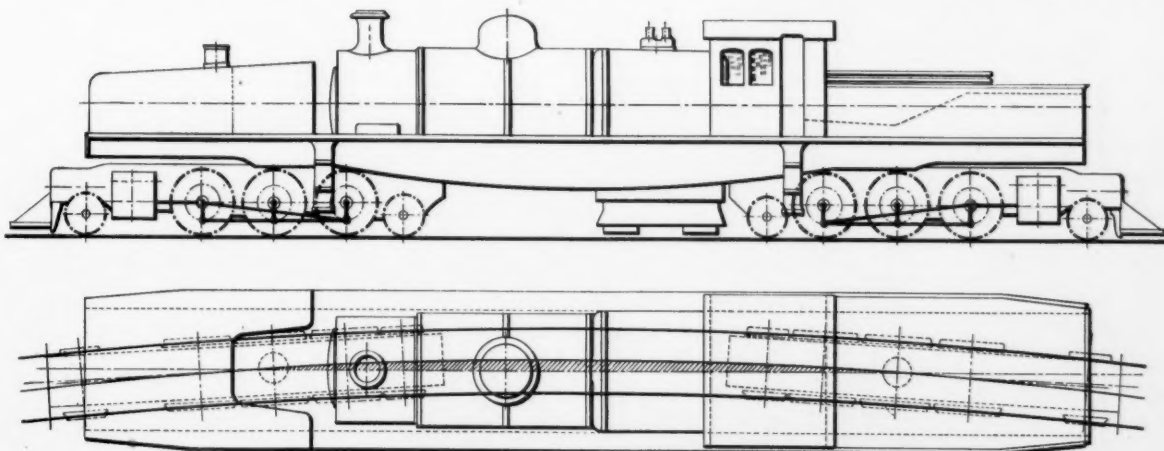
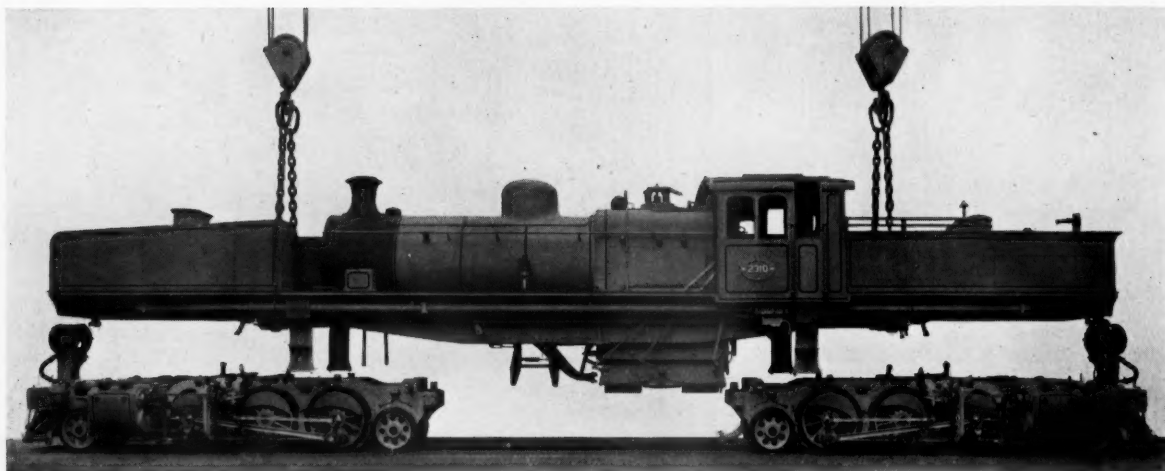


Diagram showing a North British-built modified Fairlie locomotive on 300 ft. curve



Modified Fairlie locomotive with the superstructure raised for withdrawal of bogies

engine, carrying in addition the cab, tanks and bunker.

The whole superstructure rides on pivots in the two engine bogies, and is designed to enable either engine bogie to be removed complete with its portion of the overhanging frame and tank if required. On the other hand, if the bogies alone are to be serviced, these can be removed when the superstructure is raised. While this scheme has many advantages compared with the earlier design of Fairlie locomotive, it involves an increase of weight when compared with the Beyer-Garratt type, through having the main structure frame extended at each end, also higher pivot loads, as these have to support a longer frame, tanks, and bunker.

The diagram on previous page of the modified Fairlie locomotive shows the excellent manner in which these vehicles take the curve, the centre of gravity of

the superstructure always coming within the centre of the track. This is in contrast to the Mallet articulated locomotive, in which the smokebox and boiler barrel swing outwards on the curve and increase the loads on the outer wheels, already higher, through centrifugal action, than occurs on the straight track.

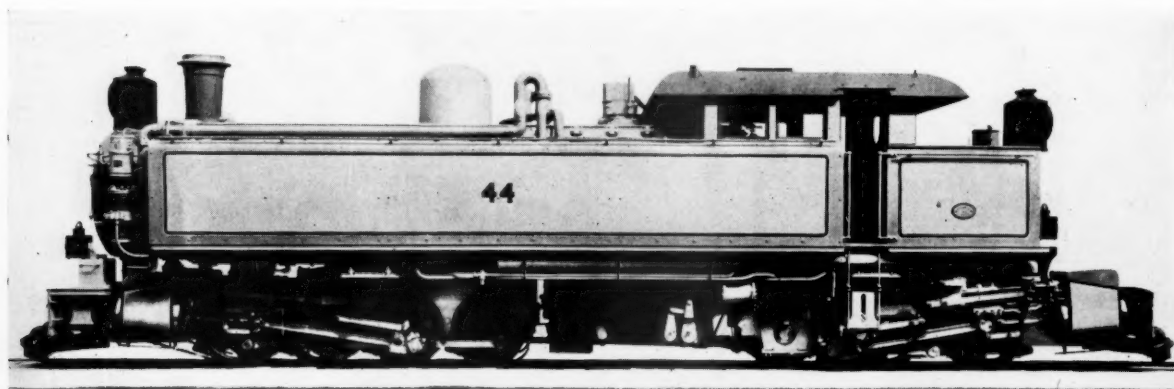
Kitson-Meyer Engines

A design which was very prominent a few decades ago and one that has given excellent service in many spheres, is the Kitson-Meyer engine, a 2-6-6-2 type tank engine. In the Kitson version a number of departures were made from Meyer's earlier design, among which were:— the dispensing of the tie rod between the two bogies, each bogie of the Kitson-Meyer engine having an independent pivot; side bearers on the rear bogie of the Meyer locomotive give place in the Kitson-Meyer locomotive to concentric

plates on the bogie structure, which check any tendency to rolling, while slides at the outer ends of the bogies guard against pitching; the bogies in the Kitson-Meyer locomotive are spaced further apart to give the designer scope for improving the firebox proportions, and the cylinders on the Meyer engine were at the inner end of each bogie. Kitson's took a free hand, cylinders being usually placed at the outer ends.

An interesting departure from the Kitson-Meyer locomotive is a type known as the Livesey-Meyer engine. This unit was designed for working with the cab leading, and although unsymmetrical in its wheelbase compared with the Kitson-Meyer type to allow for heavy haulage in one direction only, the design is quite sound, the truck on each driving bogie serving to lead the drivers as the engine enters the curve.

(To be continued)



Kitson-Meyer locomotive with rack and adhesion drives built for the Transandine Railway

EXTENSION OF CHEAP EVENING FARES.— The Southern Region of British Railways has announced that the system of cheap evening fares is to be extended to over 200 additional stations from June 28. The

system, which is still in the experimental stage, is being extended to gain further experience. The scheme operates only for passengers into London, and not for Londoners wishing to visit the suburbs. The

tickets will be available from stations where the normal fare is about 2s. or more and are available by any train after 4 p.m. Reductions are some 33 per cent of the ordinary fares.

Ten-Car Suburban Electric Trains, Southern Region

First stage in plan to alleviate rush-hours overcrowding on Eastern Section suburban lines



New two-car unit to run in conjunction with existing four-car sets

SINCE the war serious overcrowding and discomfort have been experienced by passengers travelling on the Southern Region suburban lines in south-east London and north-west Kent during the peak rush-hour periods and in particular between 5.15 p.m. and 6 p.m. An eight-car double-deck train with accommodation for 1,104 passengers was put into service in 1949, but extensive trials in service have shown that this type of train does not meet all requirements. A four-stage scheme was then prepared to provide trains of ten coaches on peak-hour services on some of the busiest suburban routes from Charing Cross and Cannon Street. On June 14, the first stage of this scheme was brought into service, when ten-car trains began running on certain overcrowded morning and evening business services between Charing Cross and Dartford, via Bexleyheath.

To form these longer trains eleven new

two-car units of the latest Southern Region all-steel-type stock have been built. These, combined with the existing eight-coach trains of similar type which have been introduced on the Eastern Section during the last few months, will give an increased seating capacity for 186 passengers, making in all 950 seats to a ten-car train. Features of the new units are the stable lighting system and thermostatically-controlled heating.

Civil Engineering

Platforms at each of the 25 stations involved in this stage of the scheme have had to be lengthened to accommodate the longer trains; the lengthening is equivalent to over 1½ miles of new platform. With a few exceptions, where it was found expedient to build the platform walls of brick, the extensions were constructed either of precast concrete trestle-type platform or of precast concrete walling with solid filling. Where the

platform extensions occurred over under-line bridges or on viaducts, special types of construction had to be adopted.

To provide space for the platform extensions it was necessary to alter tracks and connections at some fourteen stations, and at Charing Cross, London Bridge, Orpington, Blackheath, and Dartford the work was considerable. New connections to Nos. 1, 2 and 3 platform lines at Charing Cross were assembled preparatorily in New Cross Gate Permanent Way Depot. They were laid in partly on the river bridge and partly on the "fan-end" bridges between the river bridge and the main part of the station.

Extensive alterations to the track layout were also carried out at Metropolitan Junction between Waterloo and London Bridge. At Slade Green five new berthing sidings were laid in on the up side of the line and the connections of the nine sidings into the carriage inspection shed were completely remodelled at the London end to enable ten-car trains to be dealt with in the shed. It was also necessary to alter connections at Blackfriars to enable ten-car trains to be stabled in platform lines Nos. 2 and 3.

The platform extensions involved alterations to under-line bridges or viaducts at six stations. At Bexleyheath, where the station lies between two over-line bridges, it was necessary to reconstruct the bridge carrying Pickford Lane over the railway at the London end. A new footbridge was erected at Slade Green berthing depot to give access from the carriage inspection shed and sidings on the down side of the line to the new berthing sidings laid in on the up side. The carriage inspection shed at Slade Green is being extended by 82 ft. at the London end and the existing inspection



(Left) extended up platform in precast concrete trestle material, Barnehurst Station; (right) elevated structures carrying platform extensions alongside viaduct at Lewisham



Extension of down platform in progress at St. Johns. Note precast standard concrete walling, and precast concrete retaining wall on right

pits there are being extended similarly. At Dartford, the four electrified berthing sidings on the up side of the line have been extended to take ten-car trains; this extension has involved the excavation of 26,000 cu. yd. of chalk and the construction of a concrete face wall between the sidings and the up line.

Retaining walls were constructed at St. Johns to allow the down line to be slewed to accommodate the extension of the down platform and at Orpington to allow for the extension of the draw-ahead siding serving the electrified berthing sidings.

At almost all of the stations in-

volved extensive alterations to and re-siting of signals and points have been necessary. At Charing Cross alterations to the track circuiting had to be made, and a new battery house provided. At Metropolitan Junction new crossovers have been installed, with signals, and ten new track circuits provided. The lever frame in the signalbox has been completely relocated.

The down home signal bridge at Orpington has been provided with additional signals for a new crossover. There are five additional track circuits and the lever frame has been completely relocated.

At Slade Green the new sidings have

been connected to the Slade Green and Crayford Creek Junction signalboxes. The No. 1 box at Dartford has been abolished, and the work transferred to No. 2 box, with power working of all points and signals on the London side of the station and complete track circuiting of all roads between Littlebrook, Dartford and Dartford Junction boxes. A new British Railways block has been instituted between Dartford and Dartford Junction with complete relocking of the lever frame.

Although for operational reasons certain trains on the Orpington and Bromley North lines also will be made up to ten cars, it is not possible to extend the number of services on any lines during the peak hours until major works at Cannon Street have been completed.

Contractors employed on the civil engineering work were:—

Extensions of Platforms
Aubrey Watson Limited
Demolition & Construction Co. Ltd.
Caffin & Co. Ltd.

Excavations
Demolition & Construction Co. Ltd.
J. B. Edwards & Company
Caffin & Co. Ltd.

Bridge Works
Cleveland Bridge & Engineering Co. Ltd.
Demolition & Construction Co. Ltd.
Aubrey Watson Limited
J. W. Ellingham Limited
Matthew T. Shaw & Co. Ltd.
Caffin & Co. Ltd.

Extension of Slade Green Carriage Inspection Shed
Demolition & Construction Co. Ltd.
Welding Construction & Repairs Ltd.

Later stages of this scheme to meet overcrowding and on which work is progressing provide for ten-car trains on the following routes: from both Charing Cross and Cannon Street to Dartford via Bexleyheath, Sidcup, Greenwich, and Charlton; and to Sanderstead, Hayes, Addiscombe, Orpington, and Bromley North.

UNDERGROUND CONSTRUCTION METHODS IN BUDAPEST.—Work on the Budapest underground railway began in 1950. Vertical shafts were sunk on either side of the route, and horizontal working tunnels driven in the transverse direction. When these tunnels reached the alignment of the future running tunnels, chambers were excavated in which the shield for the construction of the main tunnel was assembled. With this shield method, the earth is excavated ahead of the shield and removed to the surface by conveyor belts and tip wagons. As the tunnelling proceeds, cast-iron segments and steel shells are built in, and the space between the shells and the earth is grouted by cement mortar injections. When the mortar has set, new injection holes are drilled through it for a further grouting with slag cement which protects the metal walls against water infiltrations. The joints between adjacent tubings are sealed with expanding cement. Where soil conditions favour, the shield is replaced by more conventional tunnelling methods. This has been done, in particular, in certain temporary working tunnels of cir-

cular cross-section and stayed by steel props adequate to withstand the earth pressure. On some sections, a third method of tunnel construction has been resorted to, using prefabricated concrete units. At the outset, the traditional Belgian method of tunnel construction was used in this connection: a small pilot tunnel was driven along the crown of the future tunnel, serving as a base for the construction of the roof and walls before the bulk of the tunnel was excavated and the invert built. Later the Hungarian engineers developed a method which enabled them to construct the whole upper half of the tunnel in one move. For this purpose, they used special joists of suitable curved steel profiles, serving as temporary supports, and, at the same time, as supports for the shuttering required for the final concrete walls. As these walls are constructed in short lengths at a time, the system of temporary supports is gradually removed, and its constituent parts are re-used further ahead. Similarly, where soil conditions permitted, the Hungarian engineers constructed the lower half of the circular tunnel in one move.

WELDING INSTRUCTION COURSES.—In addition to courses for welding operators, designers and draughtsmen, the Quasi-Arc Co. Ltd. has courses lasting for three weeks for welding engineers, supervisors, inspectors, and foremen. About half the time is allotted to technical and theoretical work and half to practical welding experience. The lectures and practical demonstrations cover welding procedures; electrode design; uses and applications of types of electrodes; weldability of ferrous and non-ferrous metals; radiographic examination of welds, methods used, typical faults and practical demonstrations; control of distortion and residual stresses; duties of welding inspectors and supervisors; design for welding; and economies of arc welding. The lectures are illustrated by lantern slides and films. The next three weeks course will begin on August 9, with a further course due to start on November 1. Applications for enrolment for the courses should be sent to the Quasi-Arc Co. Ltd., Bilston, Staffordshire. Local accommodation can be arranged near the Bilston Works of the company.

RAILWAY NEWS SECTION

PERSONAL

Mr. E. L. Tyler has been re-elected Chairman of the Council of the Public Transport Association for the year 1954-55. Mr. John M. Birch and Mr. T. Robert Williams were elected Vice-Chairmen.

The following appointments made in the Stores Department have been announced by Canadian National Railways:—

Mr. G. M. Young becomes General Storekeeper at Battle Creek, Mich.; Mr. J. B. Fraser, General Storekeeper at Winnipeg; Mr. P. F. Pudberg, General Storekeeper at Moncton; Mr. Wilfred Huddleston, Assistant General Storekeeper, Toronto, and Mr. William Long, Assistant General Storekeeper at Winnipeg.

Mr. G. M. Young entered railway service in 1921 as a labourer in the Stores Department at Leaside. He held a number of positions in the Toronto Stores Department before being transferred to Montreal as District Storekeeper in 1952. He returned to Toronto in 1953 as Assistant General Storekeeper.

Mr. J. B. Fraser was born in Campbellton, N.B., and served in the 1914-18 war before joining the railway in 1918 as a Store Car Foreman at Winnipeg. He served at Toronto, Quebec, and Montreal, from 1919 to 1937, when he was appointed District Storekeeper at Saskatoon. In 1942 he returned to Winnipeg as District Storekeeper, and, in 1944, he was promoted to be General Storekeeper at Moncton.

Mr. W. G. Davis, formerly Division Freight Agent, Hamilton, Canadian National Railways, who, as recorded in our February 26 issue, has been appointed General Freight Agent, Toronto, was born in Montreal in 1903. Mr. Davis has 22 years of experience in passenger and freight traffic work with the C.N.R. He served the company in various capacities at Montreal, Sherbrooke, Que., North Bay, and Ottawa before going to Hamilton.

MINISTRY OF TRANSPORT & CIVIL AVIATION

Mr. G. H. Hargreaves, Assistant Chief Engineer, Ministry of Transport & Civil Aviation, has been appointed Deputy Chief Engineer (Civil Engineering), in succession to Mr. J. F. A. Baker, whose appointment as Chief Engineer, Highways, was recorded in our issue of June 4.

Mr. Hargreaves is succeeded as Assistant Chief Engineer by Mr. J. D. W. Jeffery, T.D., A.M.I.C.E.

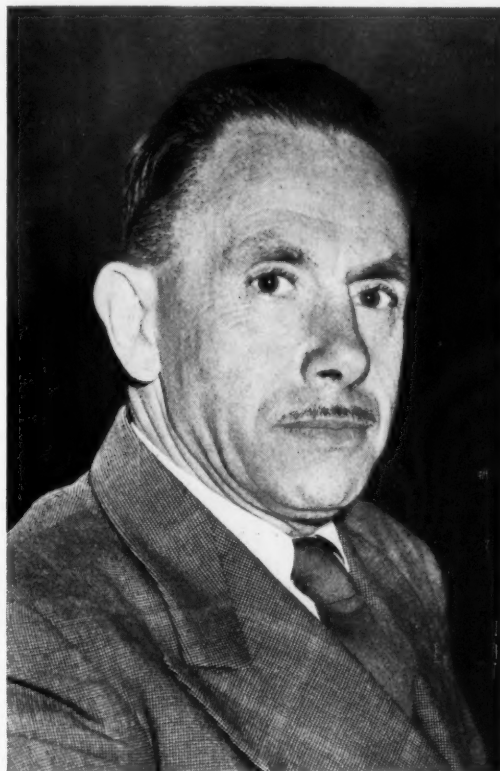
We regret to record the death at Brunswick, Germany, in his 63rd year, of Dr. Karl Ernst Wenzel, one of the departmental heads of Siemens & Halske A.G. Dr. Wenzel had been connected with the railway signalling section of the undertaking since 1932. He was well known throughout the Continent and elsewhere as

an authority in this branch of engineering. He had had much to do with the development of power interlocking during his service with the company.

Mr. F. Orchard, Chief Clerk, Victorian Railways, who, as recorded in our May 7 issue, has been appointed Comptroller of Stores of the system, succeeds Mr. L. C. Stewart, whose tenure of office covered the critical postwar years when it became neces-

sary since its inception in 1945, and was appointed Chairman of the Committee in 1952. He was also a member of the Headquarters Committee on First Aid Matters since its formation in 1948, and also served as a deputy member on the Association Committee of the Order of St. John from 1942.

We regret to record the death at Dunbar, Scotland, of Mr. Frederick William Lamb, formerly Assistant to the Divisional General Manager (Scottish Area), London & North Eastern Railway. Mr. Lamb, who retired on November 30, 1939, had completed a railway career of over 46 years. He began his career in the General Manager's Office of the North British Railway in 1893 after obtaining an insurance and commercial training, and subsequently became Senior Clerk in charge of traffic and general matters. During this period the amalgamation of the railways was carried through, resulting in the absorption of the North British Railway into the East Coast Group, and, on the formation of the London & North Eastern Railway on January 1, 1923, the General Manager for Scotland took over the supervision of the Great North of Scotland Railway in addition to the N.B.R. After experience in different sections of the office, Mr. Lamb was appointed Chief Clerk. He held this position until August 14, 1930, when he became Assistant to the Divisional General Manager, which position he held until his retirement. Before the grouping of railways, Mr. Lamb acted for a number of years as Secretary to the Scottish Railway General Managers' Conference, as well as the North British & Caledonian Companies' General Managers' Conference. He was also Honorary Secretary of the North British Railway War Relief Fund.



Mr. F. Orchard
Appointed Comptroller of Stores,
Victorian Railways

sary to import pre-cut houses, railway wagons, steam and diesel locomotives, structural steel, rails, cement, etc., valued at over £30,000,000. Mr. Orchard joined the Victorian Railways Department in March, 1917, and, possessing accounting and secretarial qualifications, was promoted to the positions of Storekeeper, Newport Power Station; Storekeeper, State Coal Mine; Branch Accountant, and Chief Clerk.

Mr. P. Anstey, Regional Ambulance Secretary, Western Region British Railways, has relinquished the position on his retirement. He was appointed Centre Secretary of the Great Western Railway Ambulance Centre in 1942, the post being re-designated Regional Ambulance Secretary, British Railways, Western Region Centre, in 1948. Mr. Anstey was Secretary of the Western Region District Ambulance Secretaries' Conference, was a member of the Standing Committee of Railway Ambulance Centre Representa-

We regret to record the death on March 25, at the age of 46, of Mr. T. J. Ryan, Deputy Chief Commercial Superintendent (Rates), Southern Railway, India. Mr. Ryan joined the former East Indian Railway at the age of 17, and transferred to the Madras & Southern Mahratta Railway as Assistant Commercial Superintendent (Development) in 1937. He became successively Secretary to General Manager, Harbour Traffic Superintendent, Mormugao, and District Traffic Superintendent, Guntakal and Hubli. Mr. Ryan was appointed Regional Traffic Superintendent, Mysore, in 1952, and joined the Commercial Department in July last.

Mr. G. M. Beck, Inspecting Engineer, Chief Civil Engineer's Office, New Zealand Railways, has retired after 40 years of railway service. He is succeeded by Mr. C. Clark, formerly Resident Engineer, Invercargill.

Mr. G. M. Beck, A.M.I.C.E., A.M.Inst.T., joined the railway service in 1914 as a civil engineering cadet, and became an assistant engineer at Wanganui in 1925. Seven years later he transferred to Dunedin



Mr. C. Clark

Appointed Inspecting Engineer,
New Zealand Government Railways



Mr. H. E. A. White

Appointed Motive Power Superintendent,
Western Region, British Railways



Mr. S. L. Kumar

Director, Research, of the Indian
Railway Board

as Assistant District Engineer, and, in 1938, he was promoted to be District Civil Engineer at Invercargill. His appointment to the position of Inspecting Engineer was made in 1944. During the 1914-18 war, he served overseas with the 1st N.Z.E.F. A presentation was made to Mr. Beck upon his retirement by the engineering and clerical staff of the Chief Civil Engineer's Office.

Mr. C. Clark, who succeeds Mr. Beck as Inspecting Engineer, began his railway career in 1924 as a civil engineering cadet at Greymouth. He became an assistant engineer at Dunedin in 1937, and, soon after the outbreak of war, left New Zealand with a railway construction battalion. For the ensuing five years Mr. Clark served in the Middle East, where he commanded both railway construction and divisional engineer companies. In 1946, soon after he had resumed duty with the railways, Mr. Clark was appointed Assistant New Works Engineer at Christchurch, later becoming Assistant Civil Engineer in the same district. He transferred to Wanganui as Assistant District Civil Engineer, in 1948, and, three years later, was appointed Resident Engineer at Invercargill. Mr. Clark, who holds associate membership with both the Institute of Civil Engineers and the New Zealand Institution of Engineers, visited Tasmania last year as a member of the parliamentary select committee appointed to enquire into the condition of permanent way and bridges used by diesel-electric locomotives.

We regret to record the death on June 16 of Mr. H. Stroud, who, since the reintroduction of the service in 1946, was Conductor in charge of "The Golden Arrow" Pullman train. Mr. Stroud was known to many hundreds of regular passengers.

Mr. B. T. Beken has been appointed as British Railways' General Agent for Belgium, in Brussels, with effect from April 1.

Mr. A. W. McMurdo, M.B.E. (Military), B.Sc. (Hons.), A.M.I.C.E., Assistant District Engineer, Paddington, Western Region, British Railways, has been appointed District Engineer, Shrewsbury, Western Region.

Mr. H. E. A. White, who has been appointed Motive Power Superintendent, Western Region, British Railways, joined the service of the Great Western Railway at Swindon as a Fitting, Turning, & Erecting Apprentice and served 12 years in the Drawing Office. In July, 1939, he was appointed Assistant to the Divisional Locomotive Superintendent at Newton Abbot, and, in the September of that year he commenced war service with the Ordnance Workshop Company of the Territorial Army, attaining the rank of Lieutenant-Colonel in 1941. Transferring to the Royal Electrical and Mechanical Engineers upon its formation, he obtained experience with infantry and armoured formations in this country before being posted to India where he ultimately became Deputy Director of Mechanical Engineering, Southern Army. Mr. White returned to railway service in October 1945, as Assistant to the Locomotive Superintendent at Bristol, where, in December, 1946, he was appointed Assistant Locomotive Superintendent, which post was later re-designated Assistant District Motive Power Superintendent. In April, 1952, he transferred to Neath as District Motive Superintendent, and in June, 1953, he returned to Bristol in a similar capacity. He moved to Swindon in February, 1954, where he has been engaged on special duties. With the re-forming of the Territorial Army after the war, Mr. White commanded a Battalion of the R.E.M.E., with its headquarters at Bristol, and is now on the Reserve, holding the rank of Lieutenant-Colonel.

We regret to record the death of M. Paul Romain, Directeur Général of S.A. Ateliers de Construction de Familleureux, Principals of C. M. Hill & Co. (Engineers) Ltd.

Mr. A. E. Grimsdale, B.Sc.(Eng.), Special Assistant Sales Management, Metropolitan-Vickers Electrical Co. Ltd., has been appointed a Director of Metropolitan-Vickers Electrical Export Co. Ltd.

We regret to record the death in Montreal, at the age of 84, of Mr. Charles Auguste de Lotbinière-Harwood, Chief Solicitor, Canadian National Railways, 1937-43.

Mr. S. L. Kumar, B.E., M.I.E., M.A.S.C.E., formerly Divisional Superintendent of the Northern Railway, India, who has been appointed the first Director, Research, of the Indian Railway Board, was born in September, 1904. On graduation from the Thomson Civil Engineering College, Roorkee, he joined the Indian Railway Service of Engineers in 1927 as Assistant Executive Engineer on the former North Western Railway. During the early part of his career he was engaged on several important works including the survey and construction of the Lyallpur-Jaranwalla Railway. From 1935 to 1939 he served successively as Assistant Executive and Executive Engineer (Bridges), a period during which he was responsible for the design and construction of earthquake resisting bridges, erection schemes for buildings in both reinforced concrete and steel, and for the re-flooring of bridges and structures including the famous combined road and rail Lansdowne bridge near Sukkur. Until 1942 Mr. Kumar was engaged on engineering design in the Central Standards Office of the Railway Board in the capacity of Assistant Chief Controller of Standardization. During the next four years he was Divisional Executive Engineer, North Western Railway and was engaged on building flood protection works along the Sutlej, air raid shelters, and installing water softeners. In 1946 he was appointed Deputy General Manager, later becoming Deputy Chief Engineer and, after partition, Administrative Officer (Engineering), Eastern Punjab Railway, a position he held until his appointment as Divisional Superintendent in 1949.

PRESENTATION TO MR. C. FURBER

Mr. C. Furber, who lately retired from the position of Commercial Superintendent, Western Region, British Railways, was the guest at a dinner on June 10 of his colleagues of the B.T.C. Commercial Committee and the Rates & Charges Committee. A presentation was made on behalf of the members of the two Committees by their Chairman, Mr. David Blee, Chief of Commercial Services. Those present included Messrs. E. W. Arkle, C. Dandridge, F. Grundy, T. H. Hollingsworth, W. H. F. Mepsted, A. C. B. Pickford, J. R. Pike, J. E. M. Roberts and W. S. Cutler.

Ministry of Transport Accident Report

Moulinearn Crossing, September 8, 1953: British Railways, Scottish Region

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport and Civil Aviation, inquired into the accident which occurred at about 12.20 p.m. on September 8, 1953, at the Moulinearn public level crossing, between Pitlochry and Ballinluig, when the 6.10 a.m. up freight train, Inverness to Perth, consisting of 35 empty vans and brake van drawn by a class "5" engine No. 44796, travelling at about 30 m.p.h., ran into a tractor with trailer, killing its driver and fatally injuring a man on the trailer. A relief crossing gatekeeper opened the gates without permission of the signalman in disobedience of working instructions. There was no derailment and it was a fine clear day.

The Crossing

The line rises from Pitlochry for 2½ miles at 1 in 132 to the crossing and then falls away to Ballinluig 1½ miles further on. The road is a short branch one leading to a few farms and cottages and movement over the railway is controlled by single hand worked gates on each side, normally locked across the road and equipped with targets and lamps. The west gate opens away from, and the east gate towards, the railway, clear of it when open. There is a right-hand curve on the approach from Pitlochry and the line is straight thereafter. A down train can be seen at 900 yd. and an up at about only half that distance, but at the time of the accident bushes in a lineside garden and a temporary hut reduced this to 40 or 50 yd. to anyone at the east gate. Working instructions are displayed at the crossing and in Ballinluig North signal box, and prescribe that the keeper must obtain permission from the signalman for a road vehicle to cross and again inform him when the gates have been replaced across the road. There is a telephone in the gatekeeper's cottage close to the west gate and another in the hut by the east one. There are no signals or indicators of any kind. Responsibility for deciding when it is safe to open the gates rests with the signalman.

Rule 101 says that when gates do not open simultaneously that towards the direction from which traffic is approaching must not be opened until the opposite gate is open, but when traffic is coming from both directions the gatekeeper must use his discretion. Previously there had been little traffic at this place and the gates were operated by a resident woman gatekeeper without assistance, but for some months lorry traffic had much increased and a relief gatekeeper was sent to man the gates for the day shift. Rail traffic was 56 to 58 trains daily, with a maximum of four in any one hour. A recent census gave 130 road vehicles per day with a maximum of 14 in an hour.

Course of Events and Evidence

A district relief porter was on duty and had commenced at the crossing on August 27. He said the tractor came to the crossing while he was closing the gates after the passage of a car from the same direction. When the car arrived at the east gate he went to the hut and twice called the signal box without a pause. As there was no response he looked up and down the line and opened the gates for the car. He was closing the west one

after it when he heard the tractor and, looking round, saw it coming through the east gate with the train approaching. He put up his hands and shouted but the driver took no notice and drove on the line. He had opened the gates in the right order and walked over to close the west one immediately the car passed in view of the likely arrival of lorries from the nearby gravel beds. (A lengthman contradicted this and said the gatekeeper opened the west gate and stood at it as the car went through.)

The signalman denied emphatically receiving any telephone calls shortly before the accident. The instrument was in good order and its bell sounded as usual when he was called immediately after it.

A District Inspector had examined this gatekeeper in March. He reported that his knowledge, although improved, still fell short of that expected in a man in his grade. The gatekeeper had, however, assured him he was continuing his studies. His basic weakness was that he had been content to perform menial portering duties and made no effort to further his knowledge of practical working, in so far as it affected his grade. He worked well under supervision. He was far from bright, slow in thinking and writing—so much so that he would never be able to take over a signal lad's duties—and his knowledge of crossing keeper's rules and regulations was fair. "No doubt he could relieve at the quieter crossings" but his intelligence was such that the examiner doubted "his ability to appreciate the implications of the special instructions" at them where there was the slightest deviation from the normal. At this crossing it was considered to be simple and "requiring the least possible of a crossing keeper."

The woman gatekeeper, though having no responsibility when relief men were in charge, nevertheless watched their work and showed the man concerned in this accident the instructions in the telephone hut, waiting while he read them, on his first day of duty. She asked him if he knew the rules about crossings and was assured he did, but suspected during the day that he was not carrying them out properly. The next morning she told the Ballinluig stationmaster, on his routine visit, of her suspicions.

The stationmaster said he emphasised the importance of the instruction about asking permission of the signalman, and saw the gates being opened in the wrong order. He did not check this fault, wishing not to distract the man's attention from the importance of asking permission to open. He took no further steps to check the man's work and did not visit the crossing again before the accident.

The man worked at the crossing on August 29, but another relieved him until September 4. The woman gatekeeper was still uneasy about his work and asked the man on duty on September 3 to leave him a note reminding him about the necessity of asking permission before opening the gates. The man acknowledged reading this, which was very clear. He was confident he understood the crossing instructions, but had adopted the practice of opening if required soon after a train passed without reference to the signalman. There was no possibility of another one on the single line for some minutes, and

it was safe to permit road traffic to pass. He could give no further explanation for disobeying the instructions. Work was not excessive and he had not been unduly pressed by road users to open the gates.

Inspecting Officer's Conclusion

This fatal accident was the result of inexcusable disobedience of instructions, made clear to the gatekeeper very fully and emphasised by the notice left by another one. Undoubtedly he was not intelligent, but Colonel Reed is satisfied he fully understood his duties and does not accept his statement that he tried to telephone before opening the gates. Even if true he still had no justification for doing so without permission.

Colonel Reed believes also that the man opened the east gate first and walked ahead of the car to the west one and then opened that. Had he opened normally under Rule 101 he would have been at the east gate when the car went through and have closed it before the tractor arrived. The accident would not then have happened. The rule is, however, conditional and intended as a guide. Failure to observe it contributed to the accident, but disobedience to the telephone instruction was by far the more dangerous.

The stationmaster should have taken a closer interest in the gatekeeper's work after his visit on August 28, when suspicions were conveyed to him. He had then spoken to the man and seen him at work and could judge his quality. The woman gatekeeper showed praiseworthy interest in the safety of the crossing and did all she could to bring about correct working. The train driver bore no responsibility for the accident.

Remarks

Colonel Reed does not think that lineside obstructions contributed to the accident. Had they not been present the engine driver might have seen the open gate sooner, whistled and made a partial brake application. It is doubtful whether that would have been noticed above the noise of the tractor engine for its driver to have checked his course. He was a local man and relied on the gatekeeper. Safe operation should not depend in any way on the extent of view, but obstructions to it are of course undesirable and have since been removed.

The instructions in the signal box would have been better if they had required all requests for permission to open the gates and the answers given, with reports from the crossing of re-closing of gates, to be recorded. That would have provided an invaluable check for inspecting staff on the work of the crossing keepers and also enabled the signalman to know definitely at all times the position of the gates. The instructions did not lay down that permission was to be obtained immediately before opening.

It was the woman gatekeeper's practice, when refused permission because the signalman knew a train to be approaching, to open immediately it passed without asking permission again, telephoning as soon as she had closed the gates. This is safe, as at least seven minutes must elapse between one train and another. Procedure would, however, have been more straightforward had it required permission to be obtained immediately before opening,

though involving more telephone calls. The instruction was amplified in this sense after the accident and block register records are now also required to be kept.

The District Inspector thought this man fit to relieve at quieter crossings where work was simple, and Colonel Reed considers this one to be such, but safety is dependent on the gatekeeper working strictly to instructions, as there are no signals and the view towards up trains is rather short. He must therefore be thoroughly reliable, though no high standard of intelligence is required. This man proved not to be, though that was not brought out by the reports on him, which dealt only with his knowledge of relevant rules and regulations. Reliability of character is of prime importance in a crossing keeper, however simple his duties, and should receive special attention when men are being selected.

Wembley Park Loops in Service

The first part of the £250,000 scheme to provide additional running tracks at Wembley Park on the London Transport Metropolitan and Bakerloo lines will be completed on June 27.

A half-mile length of new double track and a new double line span to the bridge over Forty Avenue will come into service, permitting the fast and slow southbound Metropolitan services to be segregated from each other and from the southbound Bakerloo service. The remainder of the scheme, expected to be completed in September, involves a further rearrangement of the tracks to provide for similar segregation of the northbound services.

Elimination of Bottleneck

The immediate effect of the changeover will be the elimination of the bottleneck for the southbound services. As a consequence, the seven trains from Uxbridge which run non-stop between Eastcote and Finchley Road during the morning peak will be able to call at Rayners Lane without any addition to the journey time, and five trains from the Watford line will provide a speedier journey by the elimination of the present stop at Wembley Park. Reference to the new tracks was made in our issue of October 23, 1953.

SELF-BALANCING WELDING MANIPULATOR.

—Donald Ross & Partners Limited, 1-3 Arlington Road, London, N.W.1, has developed a six-ton, self-balancing welding positioner, the largest in the firm's Twinner range of equipment. The work table is four feet square, carried on heavy-duty British Timken roller bearings, and has four outboard bearings which absorb shock during loading. A four-station push-button remote control, operating at low voltage, is provided and the work table is driven by a power unit, through a worm reduction gearbox and bench drive, all built into the heavy steel fabricated cross-head. A dog clutch is provided so that the worktable can be rotated manually, and a heavy friction band is fitted to prevent it moving too freely. The gap between the pedestals is 15 ft., this dimension, with the worktable, can be altered to suit special requirements. Similar machines of one and three tons capacity are also available.

Permanent Way Institution Summer Convention

Visits to railway installations and factories at York and on Teesside

The annual summer convention of the Permanent Way Institution was held at Scarborough from May 29 to June 3, under the presidency of Mr. M. G. R. Smith, Civil Engineer, British Railways, Western Region. Some 300 members and ladies attended, including representatives from almost every home Section, also members from the Sudan, and representatives from the Way & Works Association of the Netherlands Railways.

At the general meeting at the Public Library, Scarborough, on May 29, the Secretary, Mr. H. Janes, reported on the activities of the Institution during the past half-year, and showed that progress was being maintained by all Sections. The number of additional members enrolled and awaiting election this year amounted to 227, made up of 12 fellows, 49 associate-fellows, 27 members, 132 associate-members, and seven students.

As the text book "British Railway Track" had been almost sold out, the council had decided that a new and up-to-date edition should be prepared, and Mr. R. A. Hamnett had undertaken the editorial duties.

Mr. F. Lawson, the Hon. Treasurer since 1934, had found it necessary to relinquish the position, through indisposition, and the statement of accounts and balance sheet for the year 1953 were therefore presented by Mr. L. T. Starks, Hon. Auditor, who reported that economies had made possible a reduction of the unit cost per member. A surplus of £318 on the year's working had been placed to the general reserve fund. Donations and collections for the Benevolent Fund amounted to £60.

Mr. Smith said that for next year's convention the Council recommended that they accept the invitation of the French National Railways to hold the 1955 summer meeting in France with probable headquarters at Dijon or Aix-les-Bains. This was agreed.

After the routine business had been dealt with, Mr. A. Dean, Civil Engineer, British Railways, North Eastern Region, gave a talk on the features of interest in the portion of the North Eastern Region which were to be visited during the week, and his remarks were supplemented by lantern views.

Annual Summer Dinner

Later, after a reception by the President and Mrs. Smith, the annual summer dinner took place at the Spa, Scarborough. Mr. M. G. R. Smith presided. Among the guests were:—

Councillor E. Priestley, Deputy Mayor of Scarborough; Messrs. S. H. Fewster, S. A. Finnis, A. P. Hunter, A. MacLeod, I. C. Malcolm, H. A. Short, Colonel A. W. Weir, Messrs. Wigram, Owen R. Williams, and O. M. Williams.

Mr. J. Dobson, Vice-President for England, proposed the toast of the Town of Scarborough, and in reply the Deputy Mayor welcomed the members of the Institution to Scarborough. Many conferences took place there, he said, but it was the first time they had had a visit from the Permanent Way Institution. He congratulated members on the interest they were showing in their work.

Mr. H. A. Short, Chief Regional Manager, British Railways, North Eastern Region, proposed "The Permanent Way Institution," and said he was pleased they had decided to visit Yorkshire and hoped to welcome them to York later in the week.

Mr. Smith, in reply, expressed thanks to all for their cordial welcome, and to the Convention Committee of the York Section, especially the Chairman, Mr. A. N. Butland, and the Secretary to the Committee, Mr. J. P. Page.

Mr. Butland proposed the toast of the guests.

Praise for Railwaymen

Mr. A. C. MacLeod, Director & General Manager, Dorman, Long & Co. Ltd., replying, said too much of the criticism being directed at the nationalised railways was destructive. What was required was more constructive criticism to help the railway industry to find where its weaknesses were. Those in the railway industry were not perfect, but they were doing their best, a very good best. Speaking from a knowledge of the heavy engineering side of the railway industry, he said he had the greatest admiration for the way in which they worked.

Others present at the function were:—

Messrs. G. D. S. Alley, T. N. B. Bates, W. Bygott, R. Bradford, J. I. Campbell, T. A. Carson, H. Clough, J. L. A. Cuperus, J. T. Cooke, H. C. Dickin, A. Dean, C. E. Dunton,

F. G. Edwards, H. Eagers, A. I. Emerson, R. H. Edwards, B. P. Fletcher, J. Hyde ffolliott, H. J. Green, F. E. Harrison, P. Holdsworth, J. L. Hoorweg, H. Janes, W. D. Johns, A. Lloyd Owen, J. C. Loach, H. G. Lakeman, R. C. Mosedale, J. A. Mansbridge, A. C. Maber, H. V. G. Malings, E. J. M. Matheson, H. Ormiston, W. Paterson, J. N. Peck, J. P. Page, C. P. Parker, P. Quinn,

E. L. Rushbrooke, W. H. Roden, A. G. Rasikh, R. K. Sharp, N. W. Swinnerton, S. L. Timmermann, E. L. Triffitt, J. A. R. Turner, J. Taylor Thompson, D. C. Treacher, J. van Eden, P. Veenenbos

Technical Visits

The Convention Committee of the York Section of the P.W.I. had arranged a very full programme of works visits and social events. On May 30 some 250 members and ladies went on a motorcoach tour. The next day was devoted to visits to works in the Teesside area. Parties of members visited Skinningrove Iron & Steel Works, the Cleveland Works of Dorman, Long & Co. Ltd., the Wilton Works of Imperial Chemical Industries Limited, the Cargo Fleet Iron Works of the South Durham Steel & Iron Co. Ltd., the Normanby Iron Works, or the railway appliances works at Darlington of Henry Williams Limited.

On June 1, members travelled by train to York, where they inspected the carriage and wagon works at Holgate, the District Engineer's storeyard at Leeman Road, or the new signalbox.

At the invitation of Mr. H. A. Short luncheon was provided at the Assembly Rooms. Mr. Short presided and welcomed them to York. Mr. Smith responded.

During the afternoon alternative visits were arranged to the Railway and Castle Museums, and to places of historical interest in the city.

Returning to Scarborough, the party attended a reception and dance at the Olympia Ballroom by the Mayor of Scarborough, Councillor M. E. Bird. Welcoming them, the Mayor said he was much interested in the Institution, which was of such a democratic nature, and he wished it every success in the future.

The President expressed the thanks of all present to the Mayor for the cordial welcome they had received.

Visits to Hull took place on June 2, when members toured the docks. By invitation of Mr. S. A. Finnis, Chief Docks Manager, British Transport Commission, Humber Ports, members and their ladies were entertained to luncheon at the Station Hotel. During the afternoon the whole party went on a trip down river on one of the Humber ferry boats.

On June 3, the final day of the Convention, a coach tour of the Yorkshire Wolds was made, opportunity being taken to visit Rievaulx Abbey. Lunch was served at the Black Swan Hotel, Helmsley, after which the tour continued to Ampleforth, Malton, and Filey.

New Traction Motor Bearing

A traction motor suspension bearing has been developed by the General Electric Company, U.S.A., for its GE-752 traction motor which should permit locomotives so equipped to work from one monthly inspection to the next without any addition of lubricating oil to the axle-caps. Old style bearings can be modified quite simply to obtain the same benefit. The bearings are lubricated by means of felt wick lubricator assemblies.

In the past felt wick lubrication has resulted in a heavier consumption of lubricant than wool waste lubricators. The former method has been under investigation, and the oil consumption of felt wick lubrication has been reduced to one-third of what it was previously. The correct approach to reduced oil consumption was shown to be not to supply a minimum of oil to the journal, but to supply as much as possible, and to return all excess oil to the journal cap by means of oil return grooves in the lining.

Field Tests

Factory tests were supplemented by service tests, carried out on 26 Diesel-electric locomotives, belonging to 11 different railways, and representing different types of service—express passenger, freight, combined road-shunting, and shunting—and these proved that the locomotive provided with oil return bearings could be relied upon to run at least three times the mileage between oil renewals that would be run by a locomotive with bearings of the old type.

The average minimum mileage between additions of lubricating oil to pinion-end bearings of traction motors (which have a higher rate of oil consumption than commutator-end bearings), if oil return bearings are in use is 12,000 miles with passenger locomotives, compared to 3,500 miles with plain bearings; 13,750 miles with freight locomotives (4,750 miles) and 8,600 miles with combined road-shunters (2,650 miles). These mileages exceed the normal mileages that are run between monthly inspections.

Tests made on new return oil bearings

which had been bored to a slightly larger than normal diametric clearance, in order to simulate what would happen with a partially worn bearing, showed that the reduction in oil consumption would continue throughout the life of the bearing.

There was no appreciable flange wear on either end bearing due to the reduced oil consumption. With the introduction of oil return type bearings, it is claimed that a railway operating 50 diesel-electric passenger units, each running an average of 20,000 miles monthly, could save 11,000 gal. annually of lubricating oil, at a cost of \$4,140; and the saving in oil itself is small compared with the saving in labour.

Inquiry and Reservation Office at Glasgow Central

The inquiry and reservation office at Glasgow Central Station, British Railways, Scottish Region, replaces the office on the island site on the station concourse. It was opened for public service on June 14 by Mr. T. H. Hollingsworth, Commercial Superintendent, Scottish Region.

In close proximity to the Union Street entrance to the station, the new accommodation occupies a prominent position facing the open concourse, and affords improved facilities for dealing with general inquiries, and seat and sleeping berth reservations in an atmosphere of quiet and brightness. Separate sections are provided for telephone and personal inquiries and reservations.

The entrance from the concourse is faced with polished royal blue Aberdeen granite, surmounted by black plastic fascia, and the large plate glass windows are framed in teak. In the interior design, the panelling of Australian walnut is blended with mahogany counters and other fittings.

Lighting is fluorescent, giving an even, diffused glow through a gridded ceiling supplemented by decorative fittings placed over the public area. Heating and ventilation are regulated by the circulation of warm filtered air radiating downwards from the ceiling, and acoustic tiling is installed to absorb sound.

Ample provision is made for the display of travel and excursion literature in wall racks and glass fronted cases, each case being spot-lighted.

Mr. I. R. Frazer, Civil Engineer, British Railways, Scottish Region, supervised the design and detail specification for the new Office, and the principal contractors for the work were Colin Hunter Limited, of Glasgow.

Some 35,000 seat reservations and over 140,000 sleeping berth bookings were effected at this office last year, besides the answering of many inquiries.

Repair of Doveholes Tunnel

British Railways, London Midland Region, are carrying out heavy repairs to Doveholes tunnel. This is $1\frac{1}{2}$ miles long, and situated on the Derby-Manchester main line between Millers Dale and Chapel-en-le-Frith; it was opened 88 years ago and is on a gradient of 1 in 90, driven through rock and brick lined. The brickwork has been badly affected by water, which seeps through fissures in the rock and is led away by a culvert.

The repair work now scheduled will take about three years to complete and involves closing of the tunnel for 8 hr. nightly. About 80 men are employed.

Cutting Out Defective Brickwork

Before the actual cutting out of the defective brickwork can be done, steel ribs made of old permanent way rails are being erected to carry the lagging or timber to support the brickwork. When this is completed, the brickwork will be cut out in sections by one gang of men, who will be followed by a gang of bricklayers building back the cut-out brickwork.

Work has been going on for some time on a minor scale between trains on weekdays but from June 14 the 12.5 a.m. train from Manchester Central to London has been diverted via Chinley and Dore & Totley and arrives at St. Pancras at 6.54 a.m. instead of 6.37 a.m. Freight trains also are being diverted.



Interior of the new inquiry and reservation office at Glasgow Central Station, showing use of timber and glass in the decoration, and lighting and ventilation fittings

Overhead Equipment in Woodhead Tunnel

In the new Woodhead Tunnel, over six single-track miles of overhead equipment were erected by British Insulated Callender's Construction Co. Ltd. for the Manchester-Sheffield electrification. There are four tension lengths of equipment over each track, each approximately $\frac{1}{4}$ -mile from anchor to anchor; the average span length between supports is 146 ft. The catenary wires are supported on diablo insulators fixed to beams in the roof of the tunnel. The beams are made up of two channel sections placed back to back and battened together.

The erection of the supporting steelwork was begun after the railway Civil Engineer had completed laying the double track through the tunnel, and the complete possession of tracks, both in the tunnel and its approaches, over long periods greatly facilitated the installation of the equipment.

The steelwork, which was flame-cleaned and given four coats of paint before erection, is bolted to ceiling brackets fixed by rawl bolts into recesses high up on either side of the tunnel wall. The rawl bolt holes and recesses were incorporated into the tunnel wall by the railway Civil Engineer during the construction of the lining of the tunnel. Additional recesses, just beneath the tunnel beam, were let in during the construction, where design showed that side registration of the overhead equipment would be necessary. In these additional recesses are fitted diablo insulators and registration arms. Registration at other places is effected by means of small dropped vertical members, bolted to the supporting beams between tracks to which are fixed insulators and non-ferrous registration arms. Immediately after the erection of the steelwork, all beams through the tunnel were connected by an earth wire. This was clipped to each tunnel supporting beam over the centre line between tracks.

The usual wiring train coaches with flat roofs and normal drum carriers were used for running-out the conductors and the procedure adopted was the same as that used for open track work. The catenaries were run out first, sagged and tensioned,

and then made off at their insulated anchoring points. Solid copper wire droppers were erected in each span on the catenary and the running-out of the auxiliary catenary and contact wire followed. As completed tension lengths became available, a second gang moved through the tunnel transferring the catenary from the erection rollers into the diablo supporting insulators. This gang also fitted the droppers, registration arms and insulators in their correct and final position relative to the tracks. Finally, a pantograph inspection coach moved through the tunnel to check position and height of contact wires, and final adjustments were made.

The time taken for the complete erection of all supporting steelwork, overhead wires and fittings, was 35 working days.

Parliamentary Notes

British Transport Commission Bill

The Select Committee of the House of Lords which will consider the British Transport Commission Bill will be composed of Lord Belstead (Chairman), Viscount Goschen, Viscount Devonport, Lord Savile and Lord Shepherd. They will hold their first sitting on July 6.

Questions in Parliament

Southern Rhodesia Railway Strike

Mr. Fenner Brockway (Eton & Slough—Lab.) on June 16 asked whether the Secretary of State for the Colonies would make a statement regarding the extension of the railway strike from Southern Rhodesia to Northern Rhodesia.

Mr. Oliver Lyttelton replied:—A strike of railway firemen, which began in Southern Rhodesia on June 4, spread to Northern Rhodesia on June 5; all strikers returned to work on June 10. The strike appears to have been the result of dissatisfaction with an award of an arbitration tribunal in the dispute between the unions concerned and the Rhodesia Railways.

Tourist Travel Facilities

Brigadier C. H. M. Peto (North Devon—C.) on June 17 inquired if the President of the Board of Trade would ensure that the British Travel & Holidays Association would consult with the B.T.C. with a view to arranging to satisfy the urgent need for cheap 14-day excursion tickets and other concessions to assist the tourist trade in North Devon this summer.

Mr. Heathcoat Amory (Minister of State, Board of Trade) in a written reply stated that the British Travel & Holidays Association had already put forward a similar suggestion.

Staff & Labour Matters

Railway Wages Structure

Talks between the B.T.C. and the railway trade unions were resumed on June 21 on the new wages structure for British Railways staff.

Lodging Turns for Footplate Staff

Delegates from motive power depots in the Eastern and North Eastern Regions of British Railways decided not to proceed with their threat of Sunday strikes in protest at the introduction of new lodging turns, at a meeting in York on June 21.

The following resolution was passed at the meeting: "This conference, having considered the decision of the various depots, which is to await the outcome of official negotiations on lodging turns, presses all branches to work vigorously for the total abolition of lodging turns."

It was agreed, however, that in the event of negotiations with the British Transport Commission concerning the total abolition of lodging turns being unduly protracted, the conference of delegates would be recalled to consider what action should be taken.

Boilermakers' New Wage Demand

At the annual conference of the United Society of Boilermakers, Shipbuilders & Structural Workers a resolution demanding a substantial increase in pay was carried unanimously. This means that two of the affiliated unions of the Confederation of Shipbuilding & Engineering Unions, the B.S.S.W. Society and the A.E.U., will be pressing for an improvement in their existing rates of pay.



Erection of catenary and contact wire at the Dunford Bridge end of the new Woodhead Tunnel

COLOUR FILM OF CRANE PRODUCTION.—A new colour film, sponsored by the 600 Group and produced for K. & L. Steel-founders & Engineers Limited, was shown in London recently. The film, entitled "The Inside Story," deals largely with Jones KL mobile cranes, and pays visits to the electric arc furnaces, where the steel itself is made, then to the foundry to see the making of the moulds and castings, and on to the fettling shop, machine shop, and the assembly bays, with detours to take in the laboratory from which every stage of the work is rigidly controlled. One sequence of the film deals with the examination of castings by means of radioactive isotopes, the deep-penetrating gamma rays which they emit being used to detect flaws hidden even from X-rays. The closing sequences of the film deal with the rigorous testing of the completed cranes, particularly the 4-ton capacity KL 44 and the 6-ton KL 66.

Contracts & Tenders

British Railways, Eastern Region, have placed a contract with Wickman Limited for the supply and delivery of one slot milling machine for Doncaster Carriage Works.

The Director-General of Supplies & Disposals, New Delhi, is inviting tenders for:—

(a) 104 wheels disc, rolled steel, 43 in. dia. on tread without axles

(b) eccentric rod self-aligning roller bearing details (100 sets roller bearings and 100 sets removable sets)

(c) 12,000 spring shackle

(d) 41 coupling and connecting rods for steam locomotives

(e) 220 coupling hooks for buffers (m.g.)

Eight steel inner fireboxes of welded construction for locomotive boilers suitable for coal burning and working pressure of 210 lb. per sq. in.

Tenders quoting references (a) SRIA/16453—E/I; (b) SRI/18435—E/II; (c) SRI/16392—E/III; (d) SRI/16329—E/II; (e) SRI/16341—E/III, should be submitted so as to reach the Director-General of Supplies & Disposals by 10 a.m. on (a) (b) June 22; (c) (d) June 29; (e) June 30.

If the date for the receipt of tenders does not allow sufficient time for tenderers to obtain tender forms from India, they may submit their quotation to India in their own letter form or by telegram so long as all essential particulars are given and provided they simultaneously apply for the tender forms and return them duly completed as quickly as possible on the basis of advance quotations already submitted.

A copy of the tender form can be examined on application to the "CDN" Branch, India Store Department, 32-44, Edgware Road, London, W.2, and the drawings can be seen at the offices of Hodges, Bennett & Company, 59-60, Petty France, London, S.W.1, from whom copies may be obtained at a fixed price per sheet.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the Stores Department, South African Railways, is calling for tenders (Tender No. F.7854), for the supply and delivery of brake drum castings for C.C.F. Brill coaches (100 castings (unmachined) rear brake drum and 100 front brake drum).

The closing date for the receipt of tenders is July 15. A copy of the tender documents including specifications and conditions of contract may be inspected in Room 801 at the Branch, Lacon House, Theobalds Road, W.C.1, until June 28, after which date it will be available for loan to United Kingdom firms in order of application.

According to the Special Register Information Service, Export Services Branch, Board of Trade, the United Kingdom Trade Commissioner at Johannesburg reports that the Stores Department, South African Railways, is calling for tenders (Tender No. B.6316), for 440,550 lb. of copper piping solid drawn for locomotives (varying dia.) and 2,900 lb. of copper piping, boiler and superheated flue tubes and arch liners in 4-ft. lengths.

The closing date for the receipt of tenders is July 29, and tenders enclosed in a sealed envelope inscribed on the outside "Tender No. B.6316: For Copper Piping," should be addressed to the Chair-

man of the Tender Board, P.O. Box 7784, Johannesburg.

A copy of the tender documents including specifications and conditions of contract is available for loan to United Kingdom firms in order of application to the Branch (Lacon House, Theobalds Road, W.C.1).

According to the Special Register Information Service, Export Services Branch, Board of Trade, the South Australian Railways are calling for tenders for the supply of six diesel-electric locomotives of 1,750 h.p. each. The closing date for the receipt of tenders is August 10.

A copy of the tender documents may be inspected at the office of the Agent General for South Australia, 499, Oxford Street, London, W.1.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the General Services Administration, Emergency Procurement Service, 7th and D Streets, Washington 25, D.C., is calling for tenders (Invitation No. 2-EPN-8-6-54), for the supply to India of:—

100 steam locomotive engines and tenders 5 ft. 6 in. gauge, 2-8-2 type, "WG" class, with 18.5 long ton axleload

Fitted with superheater, Walschaerts valve gear, piston valves, roller bearings on carrying wheels

The tender to be of the double bogie type with 18.5 long ton axleload, coal capacity 18 long tons, water capacity, 5,000 Imperial gal.

It is understood that copies of the Indian Railway Specifications for Steam Locomotive Engines and Tenders No. R32-48 may be obtained on application to the Office of the High Commissioner for India, Publication Branch, India House, Aldwych, London, W.C.2, or the Manager, Government of India Publications, Civil Lines, Delhi.

Drawings and specifications may also be obtained from the Director, London Field Office, General Services Administration, Emergency Procurement Service, Keysign House, 429 Oxford Street, London W.1.

The closing date for the receipt of tenders is August 6.

A copy of the tender documents and conditions of contract, may be inspected in Room 801 at the Export Services Branch, Lacon House, Theobalds Road, W.C.1 until July 8, after which date it will be available for loan to United Kingdom firms. Further copies are available for immediate loan in order of application.

According to the Special Register Information Service, Export Services Branch, Board of Trade, the Directorate General of Overseas Development, Lisbon, has published an announcement calling for tenders for four steam locomotives of the Mikado type and one diesel shunting locomotive for the Mossamedes Railway. The track gauge is 1.067 m. and the weight of rail 30 kg/m.

The Mikado locomotives are to have two cylinders, simple expansion and superheated. The minimum load to be hauled up a gradient of 2.8 per cent is 110 tons at a speed of 30 km.p.h. On the flat the speed when hauling should be 50 km.p.h.

The diesel locomotive should have an adhesive weight of 30 tons and two or more axle drives and should attain a speed of 30 km.p.h. The engine is to be a four-stroke diesel.

Although the specifications refer only to the supply of four Mikado steam loco-

motives and one diesel locomotive, the State reserves the right to increase the order to eight Mikado locomotives and three diesel type locomotives, and therefore bids should allow for the delivery of eight steam locomotives (four to be delivered at Luanda) and of three diesel locomotives (one or two to be delivered at Luanda).

A provisional deposit of esc. 280,000\$00 (£3,500) for the steam locomotives and esc. 40,000\$00 (£500) for the diesel locomotive must have been made with the Bank of Angola to the order of the Directorate General of Overseas Development, Praça do Principe Real, 13, Lisbon, or the Administrative Commission of the Development Fund of Angola (CAFFA) at Luanda. For these deposits may be substituted bank guarantees acceptable to the State and valid until the final deposits are made.

Tenders will be opened at 3 p.m. on August 26 at the offices of the Directorate General of Overseas Development, Praça do Principe Real 13, Lisbon, and at the office of the Administration Commission of the Development Fund of Angola (CAFFA), Luanda. The tender conditions and specifications can be obtained from the aforementioned offices. An unofficial translation in English can also be obtained from Hugo International, Rua do Crucifixo, 76-40, Lisbon.

The Special Register Information Service, Export Services Branch, Board of Trade, reminds United Kingdom exporters that in Colombia, Cuba, Mexico and the Dominican Republic the sign "\$" is in common use to denote the peso, the unit of currency in these countries; in the Dominican Republic the sign is prefixed with the letters "R.D." thus, "R.D.\$."

There is an obvious possibility of confusion arising in the use of the sign "\$" to denote both the peso and the dollar, particularly in Colombia and Mexico where the peso is not at par with the dollar. To avoid any possibility of misunderstanding, wherever the sign is intended to indicate dollars it should be prefixed with the letters "U.S." which is the accepted practice in each of the four countries mentioned.

If for any reason it is necessary to quote or refer to pesos, the word "pesos" or the abbreviation "ps." should be used, but exporters are reminded that the generally accepted practice in all the dollar account countries of Central and South America is for quotations to be in U. S. dollars.

BIRMINGHAM & MIDLAND MOTOR OMNIBUS CO. LTD.—At the annual meeting of the Birmingham & Midland Motor Omnibus Co. Ltd., on May 25, Mr. J. S. Wills, the Chairman, said that no relief from fuel tax was given in 1953. Increases in wages introduced in December 1953 and March, 1954, would cost some £215,000 a year. As a result the company was obliged to make its fourth application for fare increases in three years, although on this occasion modest increases in concession fares only are sought. Even after this, he added, the new fares would average only 28 per cent higher than prewar. The increased revenue for which the company is asking amount to 6d. a gallon of fuel, so that even a modest tax reduction of that order would enable the whole of the claim to be withdrawn. Passengers carried dropped from some 462,250,000 in 1952 to 453,000,000, reflecting hardening prices, increases in private motoring, and the number of cycles on the road.

Notes and News

Assistant Locomotive Superintendent Required.—Applications are invited for the post of assistant locomotive superintendent to assist the district superintendent (locomotive), Nigerian Railway, in the general administration of a district. See Official Notices on page 731.

Assistant Transport Manager Required.—Imperial Chemical Industries Limited, Billingham Division, has a vacancy for an assistant transport manager. A university graduate of about 30 years of age who has had practical experience in transport work subsequent to his university career would be preferred. (See Official Notices on page 731.)

Railway Benevolent Institution.—At a meeting on June 16 the board of the Railway Benevolent Institution granted annuities to two widows and five members, involving an additional liability of £125 per annum. Fifty-three gratuities also were granted amounting to £567 to meet cases of immediate necessity. Grants made from the Casualty Fund during the month of May amounted to £728 9s.

Railway Arrangements for Royal Highland Show.—For the Royal Highland & Agricultural Society Show at Dumfries this week, British Railways, Scottish Region, have arranged cheap excursions from all parts of Scotland. On certain days during the period of the show special day excursion tickets are being issued from Inverness, Aberdeen, Dundee, Glasgow, Edinburgh, Ayr, Newcastle, and many other places. Five special trains are being run for show visitors, including one from Keith and several stations in Aberdeenshire. Most of the exhibits, which include machinery, tractors, agricultural implements, and so on, were conveyed by regular freight train services, but in addition a special train from Exeter brought exhibits from the Bath & West, and one, from Gloucester, exhibits from

the Gloucester & Three Counties Show. The showground is about 1½ miles from the station and to deal with the additional traffic the railway cartage fleet at Dumfries was considerably augmented. On June 26, 27, and 28, after the end of the show, six special trains are scheduled to run from Dumfries to Windsor, carrying exhibits to the Royal Show which opens there on July 6.

Automatic Luggage Lockers at Blackpool North.—The seventh station in the London Midland Region of British Railways to be equipped with sixpence-in-the-slot automatic luggage lockers is Blackpool North, where sixteen lockers were installed on June 14.

Canadian Pacific Dividend.—At a meeting of the board of directors of the Canadian Pacific Railway Company held on June 14 in Montreal, a dividend of 2 per cent on the preference stock was declared in respect of the year 1954. This will be payable, on August 3, to stockholders as at 3.30 p.m. on June 30.

British Railways Successes at Carthorse Parade.—Only two British Railways carteries were in the entry at this year's London Carthorse Parade at Regents Park, but each gained a first prize, a long service award and a Clydesdale award. Both have been at the London Midland Region Bow & Old Ford Goods Depot for over 40 years.

Production of Cor-Ten Steel at Abbey Works.—Production of Cor-Ten steel will commence shortly at the Abbey Works of the Steel Company of Wales. Cor-Ten is a registered trade mark of the United States Steel Corporation, and a British licence was granted some years ago to Colvilles Limited, from whom the United Steel Companies Limited and the Steel Company of Wales obtained sub-licences. Cor-Ten is not a stainless steel and, although it rusts during the first few months at the same rate as its mild steel

counterpart, the peculiar rust formed acts as a protective coating and retards corrosion. The steel is widely used in America for railway wagons, mine cars, petrol tankers, and so on. It is stated that British Railways have recently placed a large order for this material which will be used for the manufacture of railway wagons.

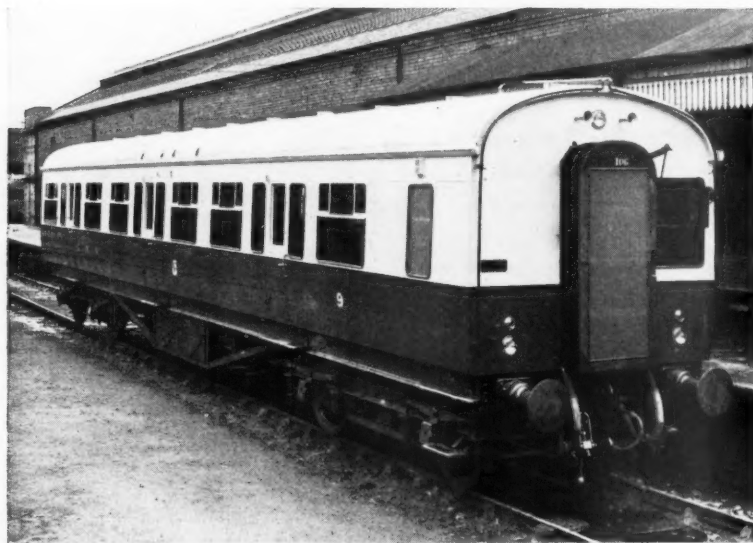
New Timetable of Irish Services.—For the first time British Railways have issued a comprehensive timetable of all services to and from Ireland by their routes and by those of associated shipping companies. The first edition of this 64-page book covers the summer services, June 14 to September 19, and thereafter it will be published at each change of the official timetables. Apart from several photographs of ships, the publication contains details of connecting train services and fares to and from principal towns in Great Britain and the ports of Ireland.

A.B.C. Coupler & Engineering Co. Ltd. Results.—The consolidated trading profit of the A.B.C. Coupler & Engineering Co. Ltd. to September 30, 1953, was £110,285 compared with £115,291 in 1952. Net profit was £51,480 (£59,323) after tax deduction of £58,808 (£49,591). The ordinary dividend announced is 25 per cent (12½ per cent). General reserve receives £40,000 (£25,000) and £79,589 (£77,830) is carried forward. The Chairman, Mr. Gerard Young, states that permission is being sought to effect a 100 per cent scrip issue. At the same time it is proposed to consolidate the 1s. shares into 5s. shares. If permission is secured, resolutions will be submitted to an extra-ordinary meeting.

North Central Wagon & Finance Co. Ltd.—The directors of the North Central Wagon & Finance Co. Ltd. have informed the shareholders that the provisions of the Transport Act, 1953, have made the participation of finance companies in the financing of the return of denationalised road vehicles to private owners more difficult than need have been the case. The directors express disappointment at not having been able to give as much assistance in such cases as they would have liked. Group current assets were £8,949,149, against £7,660,373 in the previous year, of which £8,130,254 (£6,815,817) was represented by amounts receivable, less proportion of revenue subsequent to 1953. Current liabilities aggregated £678,587 (£587,802) and loans and bills £6,202,901 (£5,281,457).

International Railway Congress Delegates Visit the Vulcan Foundry.—Three delegates to the International Railway Congress from Yugoslavia recently paid a visit to the Vulcan Foundry. The delegates, Mr. B. Bogavac, Director General, Yugoslav State Railways, Mr. J. Svagel, Director, Railway Institute, Belgrade, and Dr. D. Velickovic, Professor, Railway Institute, Belgrade, were shown over the various shops where they saw under construction "J" class 2-8-0 type locomotives for the Victorian Railways, 3,600-h.p. main-line electric locomotives for the Spanish National Railways, and diesel-electric metre-gauge locomotives of 1,000 b.h.p. for the Rede Ferroviaria do Nordeste, Brazil; the electric and diesel-electric locomotives are being built in collaboration with the English Electric Co. Ltd. The delegates also saw under construction some of the 260-b.h.p. "B2" class, diesel-mechanical locomotives, for the New Zealand Government Railways.

Diesel Trailers in Ireland



A 72-seat driving trailer built by the Great Northern Railway Board at Dundalk to work with a railcar on local services. (See our April 30 issue)

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

CLERK, aged up to 30 years, with experience of railway rates and charges and export procedure, required for transport section of an old-established Mitcham company. Good geographical knowledge essential. Reply, stating experience, salary required and age, to Box 260, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

YOUNG ENGINEERS required for setting out, etc. Experience on railway work desirable but not essential. Must have completed National Service. Apply Eagle Construction Co. Ltd., East Common Lane, Scunthorpe.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with international traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Methods. In collaboration with Ernest I. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

These locomotives are being built in conjunction with the Drewry Car Co. Ltd., and are fitted with M4AA7 type engine manufactured by the National Gas & Oil Engine Co. Ltd.

Spanish Railways £4,000,000 Plan.—The Spanish Minister of Public Works has announced a £4,000,000 scheme for modernising the Spanish National Railways, to be carried out in accordance with the American economic and military aid programme to Spain.

Southdown Motor Services Limited.—Southdown Motor Services Limited made a net profit of £258,758 in the year ended March 31 last. The balance brought forward was £198,988. After transference of £150,000 to general reserve, the balance of £307,746 is available for dividends and carry forward.

Survey of Canals and Inland Waterways.—The board, consisting of Lord Rusholme (Chairman), Sir Rex Hodges and Mr. R. D. Brown, appointed by the Chairman of the British Transport Commission to undertake survey of the Commission's inland waterways, has held several meetings, and is now paying visits to the waterways. It is intended at a later date to consider the views of bodies interested in the subject. Mr. W. L. Ives has been appointed Secretary to the Board, and communications should be addressed to him at 22, Dorset Square, London, N.W.1.

Disposal of Road Haulage Units.—The British Transport Commission and the Road Haulage Disposal Board have announced the offer of two further lists of units. List S.1, which will be published on July 14, comprises 50 units, with 1,250 vehicles, all with premises. Some are units designed to meet known requirements and others have been unsuccessfully offered on previous occasions. The majority are units of considerable size and include important depots in London, Edinburgh, Glasgow, Hull, Sunderland, Manchester, Thatcham, and Oxford. List 7, to be published on July 28, contains some 820 units

HER MAJESTY'S COLONIAL SERVICE, ASSISTANT LOCOMOTIVE SUPERINTENDENT, NIGERIAN RAILWAY. To assist the District Superintendent (Locomotive) in the general administration of a District. Responsible for maintenance of locomotives and inspection of steam pumps used in connection with water supplies. Appointment is either pensionable or on contract in the scale £730 × £40—£1,290 per annum, with addition of 20 per cent for contract appointment. An expatriation allowance varying between £180-£350 per annum is also payable. On contract appointment a gratuity of £100-£150 per annum is payable on satisfactory completion of contract. Free first-class passages for officer and his wife, and an annual maintenance allowance or free passage allowance up to £75 each is payable in respect of a maximum of two children. Furnished quarters available at rental charge of 10 per cent of basic salary. Leave is granted at the rate of seven days for each month of residential service after tour of 18-24 months. Candidates for pensionable appointment should be between the ages of 26-40 years and be A.M.I.Mech.E. or have taken Parts A and B of the examination for Associate Membership and be prepared to qualify during probation. For contract appointment the professional qualification and age limit may be waived if compensated by wide experience. Candidates should have served an apprenticeship and pupillage in a first-class Locomotive Repair Workshop and thereafter have had footplate and Running Shed experience, and have worked at least two years on administrative duties in a Locomotive Running Department. Drawing Office experience an advantage. Opportunities for rapid promotion in the higher ranks of Nigerian Railways are good. The progressive growth of traffic and the wastage in senior posts due to normal retirements combine to give excellent opportunities for advancement to men of approved worth. Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving, briefly, age, qualifications and experience. Mention the reference number BCD.110/14/03.

with 2,400 vehicles. A considerable number of these have been offered previously, but there are some new units, generally of vehicles only.

Emu Bay Railway Co. Ltd.—The profit and loss account for the year to December 31, 1953, of the Emu Bay Railway Co. Ltd., shows a credit balance of £25,758, which, with £85 brought forward, makes a balance of £25,843.

Craven Bros. (Manchester) Ltd.—The annual meeting of Craven Bros. (Manchester) Ltd. was held on May 6 at Stockport. Mr. J. R. Greenwood, the Chairman, said in his circulated statement that the output in 1953 was the highest in the company's history, and the volume of firm orders on the books at the close of 1953 was a record. New orders exceeded deliveries. Export business was increasing, despite keen Continental competition, and home trade falling slightly. He thought that competition could be met if full output could be maintained without price increases, but the fear of increasing costs, mainly because of wage demands, and the consequent loss of export business, was constant and applied not only to the company but to all British industry. Mr. Greenwood considered this a matter of prime national importance, to which the Government should give close attention. A brief account of the financial results appeared in our issue of April 16.

British Electric Traction Co. Ltd.—The results of the British Electric Traction Co. Ltd. for the year ended March 31 last show an aggregate profit for the group of £2,697,316, compared with £2,238,447 in the previous year. After writing off cost of increases of capital of £33,890 (£210) and providing £1,257,549 (£1,046,602) for taxation, the group net profit is £1,405,877 (£1,191,635). Allowing for minority interests in subsidiaries, £148,954 (£133,075), the proportion attributable to the parent company is £1,256,923 (£1,058,560). Dividends recommended are 8 per cent on the 6 per cent cumulative participating preference stock,

IMPERIAL CHEMICAL INDUSTRIES LIMITED. Billingham Division, has a vacancy for an Assistant Transport Manager. A university graduate of about 30 years of age who has had practical experience in transport work subsequent to his university career would be preferred. The person appointed will be primarily concerned with road transport, but the post will provide opportunities for gaining experience of other branches of the Division's transport activities. Write, giving details of qualifications and experience, to the Staff Manager, Imperial Chemical Industries, Billingham Division, Billingham, Co. Durham, quoting Ref. M. 6.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY SIGNALLING AND COMMUNICATIONS INSTALLATION AND MAINTENANCE. A practical guide, especially intended to help Signal Inspectors, Installers, Fitters, Linesmen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth. 8s. By post 8s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, *Lothian Press, Limited*, 33, Tothill Street, London, S.W.1.

on account of which 3 per cent has already been paid (same), 8 per cent on the non-cumulative preferred ordinary stock, on which 4 per cent on account has been paid (same), and 50 per cent on the deferred ordinary stock, on which 15 per cent has been paid on account (35 per cent). A similar dividend is declared on the "A" deferred ordinary stock, compared with 35 per cent last year. After deducting dividends £514,838 is left, representing £372,894 (£344,594) attributable to the company and retained by subsidiaries, and £141,944 (£175,382) to be added to the parents' undivided profits account.

Kitchen & Wade Limited.—The annual meeting of Kitchen & Wade Limited is to be held at Halifax on July 8. Consolidated current assets amount to £613,389, compared with £514,449 in the previous year. This figure includes stock £78,014 (£73,769), tax certificates £108,700 (£173,575) and cash £309,211 (£120,179). Current liabilities and provisions amount to £130,352 (£104,476). Revenue reserves and surplus are £405,840 (£317,843). Capital reserves total £57,680 (£63,592), and capital commitments £27,700.

Opening of Birmingham Engineering Centre.—A permanent engineering centre was opened at Birmingham on June 17 by the Birmingham Exchange. It is claimed to be the only permanent engineering exhibition in Britain, and is designed to allow manufacturers in the engineering and allied industries "to display their products on a permanent basis and enable engineers, at home and overseas, whether buyer or manufacturer, to keep abreast of the latest developments within their industry." It is anticipated that a valuable liaison will be established between overseas buyers and smaller engineering firms. More than 200 British firms, from all parts of the country, have taken space and more are waiting to exhibit. Besides the exhibition itself special features of the centre include: an extensive information department, with a catalogue and technical library, containing catalogues of over 5,000 engineering firms, with a comprehensive

collection of directories and reference books; an exhibition hall for private short-term exhibitions; lecture rooms for large or small meetings, with film projection facilities; private offices with secretarial and telephone services for visiting executives; a coffee room, where more than 100 current technical periodicals covering all fields of engineering will be available; and a stand design service.

Associated Commercial Vehicles Ltd.—The directors of Associated Commercial Vehicles Ltd. announce that they intend to redeem the whole of the company's £1,500,000 3½ per cent ten-year unsecured loan stock on September 30, 1954.

Keith, Blackman & Co. Ltd. Results.—An ordinary dividend of 12½ per cent is announced by Keith, Blackman & Co. Ltd. for the year ended March 31 last. This is the same as in the previous year. Net profit was £276,866 (£413,025) before taxation of £137,865 (£236,957).

Butterley Co. Ltd. Results.—The Group current assets of the Butterley Co. Ltd. for 1953 amounted to £3,975,803, compared with £3,711,588 in 1952. This figure included £1,616,324 (£1,459,079) for stock and work in hand, £1,534,254 (£1,003,069) debtors, balance of interim income and so on £102,027 (£275,630), quoted investments £245,853 (£20,033) valued at £285,706, unquoted investments £4,230 (same), cash £473,115 (£739,547). Current liabilities were £1,298,944 (£957,119). Capital reserves totalled £1,990,391 (£1,387,921), revenue reserves £1,090,083 (£969,059), loans £2,095 (£203,196). Contingent liabilities totalled £26,066.

Protective Equipment for Three-Phase Crane Leads.—British Thomson-Houston & Co. Ltd. has evolved protective equipment, known as type CPS 298, to provide against hazards arising from the breakage of bare overhead crane conductors. An impedance network is created, connected in star to each of the three-phase leads. The two star points are connected through a rectifier feeding a sensitive relay. Should one conductor break, the two networks become unbalanced and a voltage exists between the two star points, current flows and energises the relay. A normally closed contact on the relay is connected in series with the under-voltage coil on the feeder circuit breaker, the relay in opening, trips the circuit breaker, and interrupts supply to the crane wires. A feature of the equipment is the need for only one pilot wire between the two networks at opposite ends of the system. The equipment is housed in two die-cast boxes approximately 7 in. × 7½ in. × 5 in. deep.

Aluminium Laboratories Limited Extensions at Banbury.—The extensions of the research laboratories of Aluminium Laboratories Limited, the research engineering, and geological exploration unit of Aluminium Limited, have been completed. The new facilities, construction of which was begun in 1951, have cost over £300,000 and provide a total area of 65,000 sq. ft. The Aluminium Laboratories conduct basic, and applied research in light metal, and investigate technical problems in the fabrication and sales for the benefit of associated companies in the organisation, including the Northern Aluminium Co. Ltd., the largest fabricating unit in the group, and Aluminium Union Limited. The new premises provide a

completely integrated modern laboratory fully equipped for chemical, metallurgical, physical, and engineering research. The many facilities available include a laboratory for the testing of large prototype aluminium structures for bridges and so on, development studies in aluminium paste, work on welding, and other joining processes, suitable for aluminium and its alloys.

Forthcoming Meetings

June 26 (Sat.).—British Railways, Southern Region, Lecture & Debating Society. Afternoon visit to the old Croydon, Merstham & Godstone Railway, from Coulsdon to Merstham.

June 26 (Sat.).—Railway Students' Association. Visit to the marshalling yards at Whittemoor. Party leaves Liverpool Street (platform No. 9), at 8.24 a.m.

June 30 (Wed.).—Institute of Metals, at

4, Grosvenor Gardens, London, S.W.1, at 5 p.m. Lecture on "The Brittle Fracture of Metals: Some New Developments," by Professor E. Crowan.

June 30 (Wed.).—Permanent Way Institution, Manchester & Liverpool Section. Evening inspection of prize winning length of line on the Liverpool District, by permission of Mr. G. F. Kent, District Engineer, British Railways, London Midland Region, Liverpool.

July 1 (Thu.).—Railway Students' Association. Evening visit commencing at 6.30 p.m., to British Overseas Airways Corporation terminal at Victoria.

July 8 (Thu.) to July 13 (Tue.).—Railway Students' Association. Annual Convention at Exeter.

Until September 25 (Sat.).—"Popular Carriage" Exhibition (Two centuries of carriage design for road and rail) in the Shareholders' Meeting Room, Euston Station, London, N.W.1. Weekdays 10 a.m. to 7 p.m.; Sundays 2 to 7 p.m.

Railway Stock Market

Business in stock markets has remained on a substantial scale, particularly in the industrial and gilt-edged sections. Sentiment reflected the belief that Sir Winston Churchill's visit to the U.S.A. may help in bringing about hopeful developments in international affairs. British Funds were in demand at higher prices, and there were many features of strength in other sections, helped by news of more dividend increases. A factor which tended to help sentiment was the decision of the Shell group to issue half-yearly profit figures. The assumption is that it may not be long before many other companies decide to do so as well. This would make interim dividend announcements much more important, because normally interim dividends are small in relation to the year's total dividend and are so often unchanged that they give no indication of the actual trend in earnings.

Foreign rails were again quiet with no particular feature of interest, though a little selling put United of Havana stocks easier, the second income stock being 41 and the consolidated stock 6.

Debt settlement hopes, however, brought in buyers for Guayaquil & Quito Railway bonds, which rose further to 54, but the developments in Guatemala affected sentiment in regard to Mexican Central "A" bonds which eased to 71½. Antofagasta stocks were steadier with the ordinary at 8½ and the preference 41.

Manila Railway stocks remained firmly held with the "A" and "B" debentures at 144 and 137 respectively, while the preference shares were 19s. 1½d. and the ordinary 1s. shares 9s. 1½d.

Canadian Pacific eased to \$49½, but the preference stock held steady at £69½ and the 4 per cent debentures at £89½. Algoma Central voting trust certificates have changed hands at 3½. White Pass no par value shares eased to \$25½.

Elsewhere, San Paulo 4s. units were 3s. 6d. and Nitrate Rails shares 21s., Brazil Railway bonds changed hands up to the higher level of 8½. Dorada Railway ordinary stock was 73.

Barsi was 121½ among Indian stocks. Midland of Western Australia ordinary stock was 21 and the second debentures have changed hands around 40. Nyasaland Railways 3½ per cent debentures kept

at 79½, and the shares again changed hands at slightly over 4s.

Road transport shares continued firmly held with Southdown at 32s., West Riding 31s. 9d., and Lancashire Transport 57s. B.E.T. 5s. units were an outstanding feature with an advance to 53s. on the raising of the dividend from 35 per cent to 50 per cent, the decision to distribute a share bonus of 200 per cent and the forecast that next year's dividend on the trebled capital should be 20 per cent, which would be equal to 60 per cent on the present capital.

The prevailing City view is that there will be a bigger response for Stewarts and Lloyds shares from genuine investors than was the case of the other steel share issues. It is now generally realised that steel shares are not likely to offer much scope to the stag, who applies for new issues with the object of selling right away if, as he hopes, there is a good premium when dealings start. Stewarts and Lloyds shares are regarded as having excellent investment merits at the issue price of 35s. The yield is over 7½ per cent based on the well covered 12½ per cent dividend, and it seems reasonable to suppose that, even in the event of re-nationalisation in the future, shareholders would not be given less than the price at which the shares are now being issued to the public. If there were no threat of re-nationalisation by the Labour Party, steel shares would be issued at prices showing yields of 5½ per cent or lower, compared with the current yield basis of over 7 per cent.

Vickers at 35s., "ex" the share bonus, have been strong and active in response to the terms of the English Steel acquisition, while Cammell Laird 5s. shares at 15s. 6d. were active and higher for a similar reason. Ruston & Hornsby, however, declined to 51s. on the unchanged dividend. Tube Investments shares rose to 68s. 6d.

Among shares of locomotives builders and engineers, Beyer Peacock were 39s., and Charles Roberts 5s. shares 9s. 3d., while Birmingham Carriage were 26s. 4½d. and Hurst Nelson 42s. North British Locomotive have been firm at 16s. 3d., Wagon Repairs 5s. shares 13s. and Gloucester Wagon 10s. shares 17s. Vulcan Foundry were 24s. 9d.

